

+

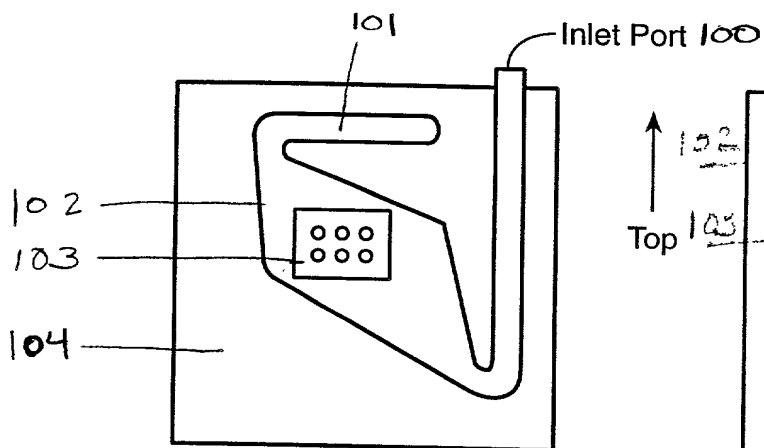


Fig. 1A

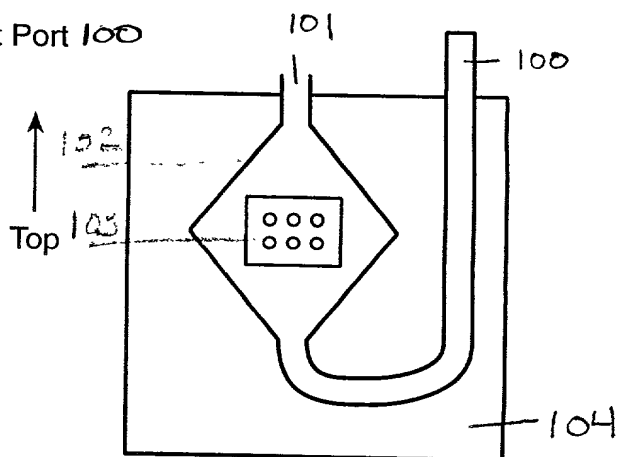


Fig. 1B

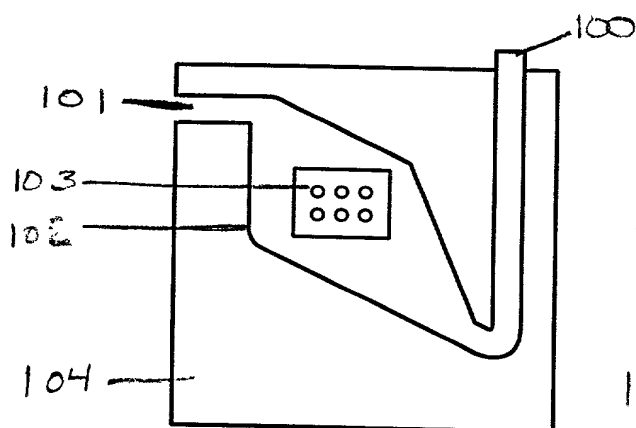


Fig. 1C

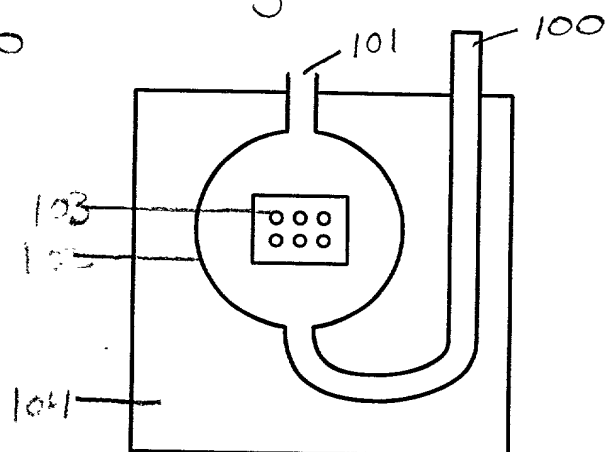


Fig. 1D

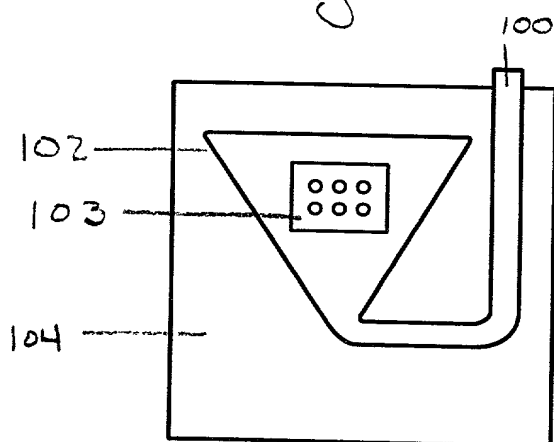


Fig. 1E

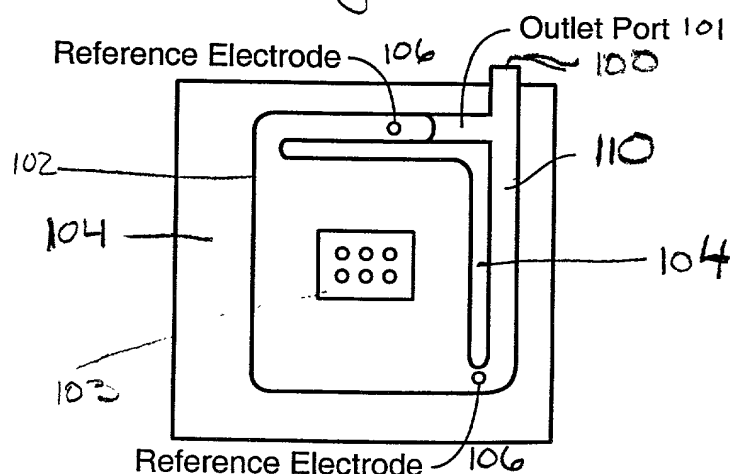


Fig. 1F

+

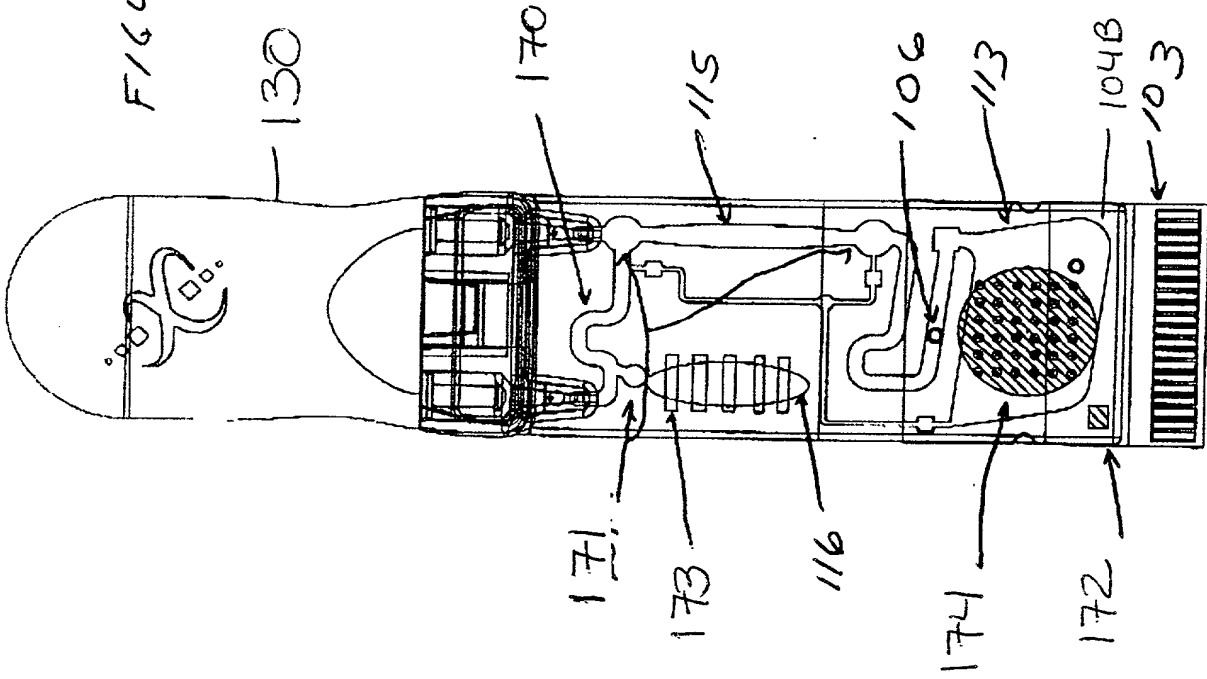
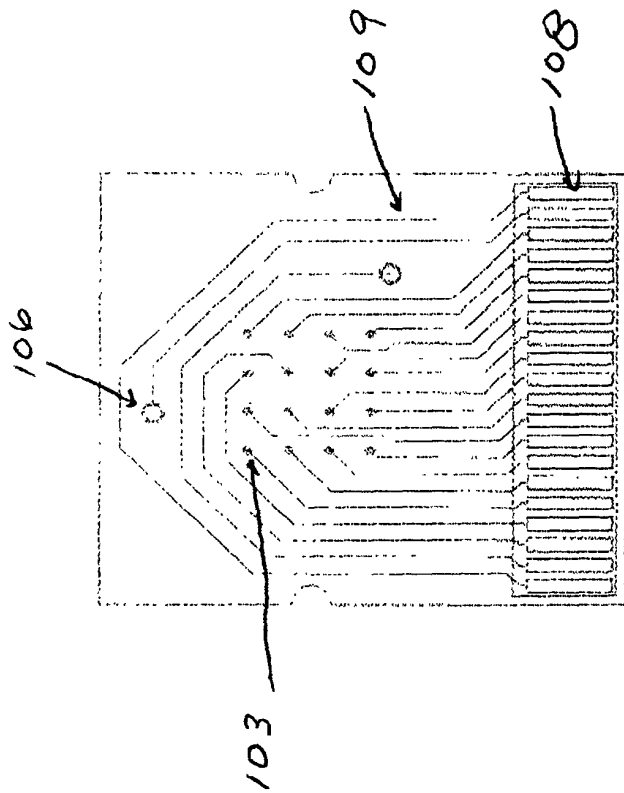
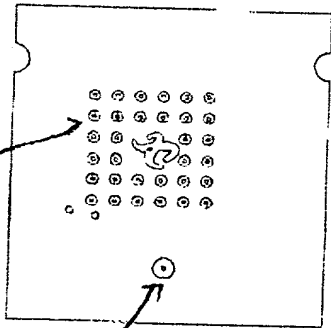


FIGURE 2H



1 I



1 J

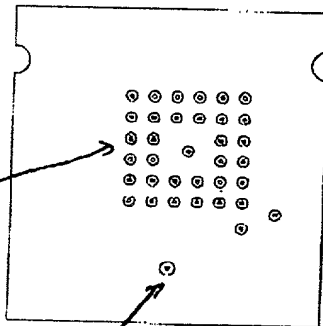
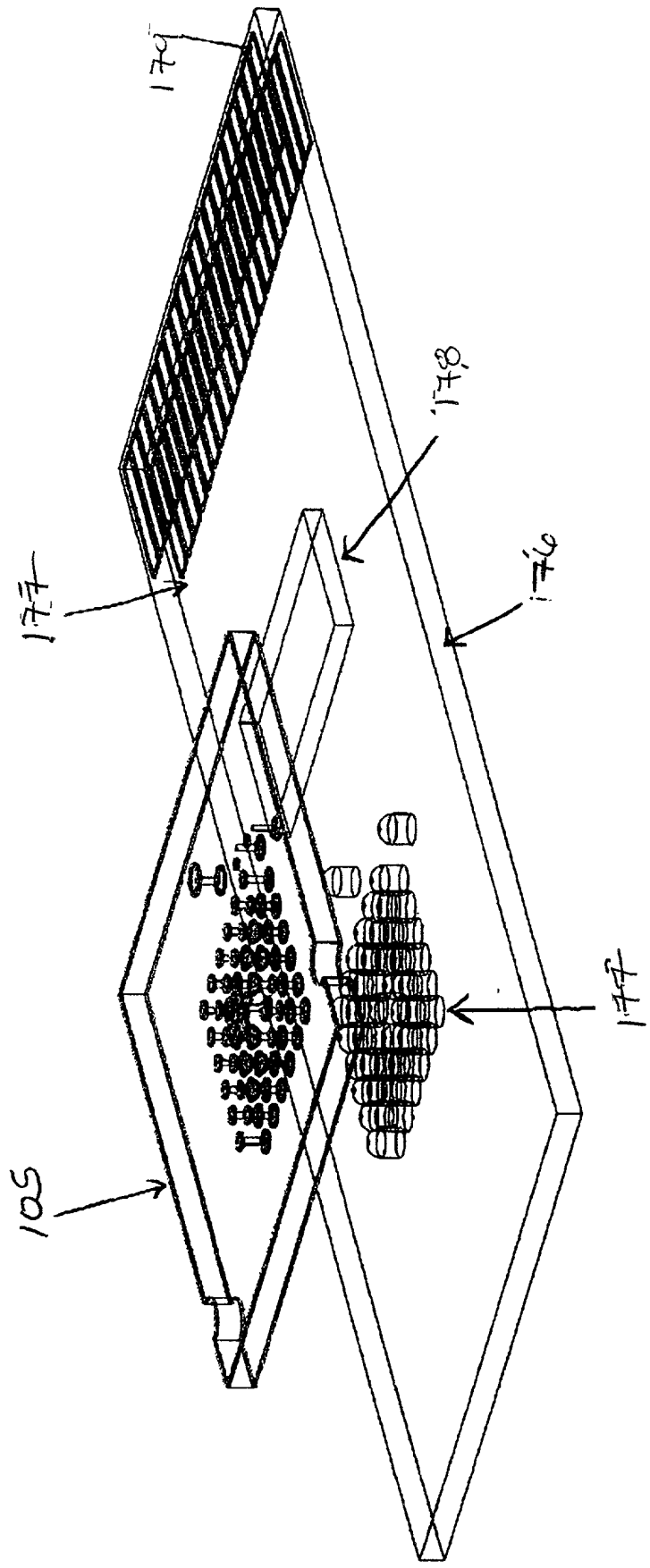
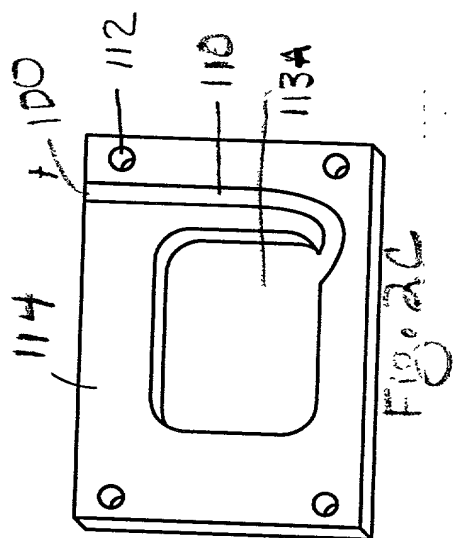
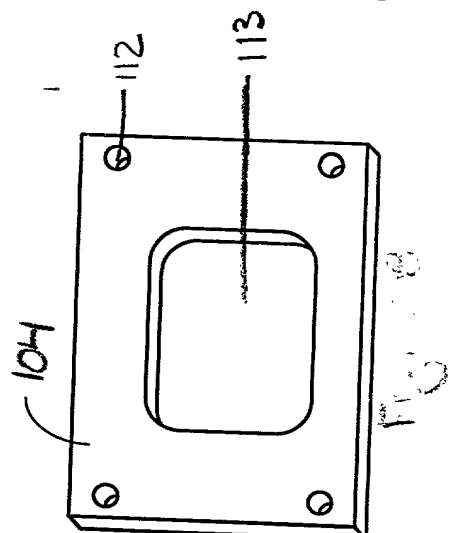
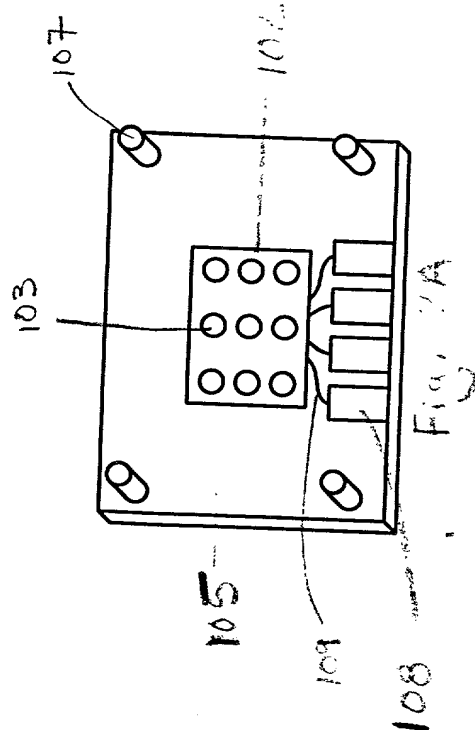
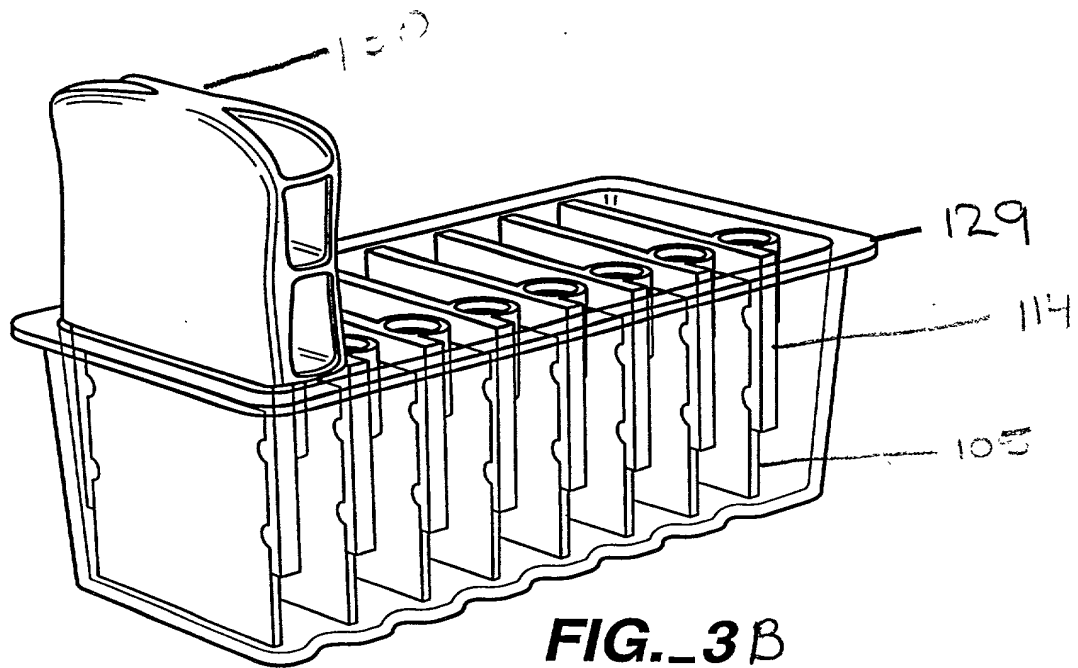
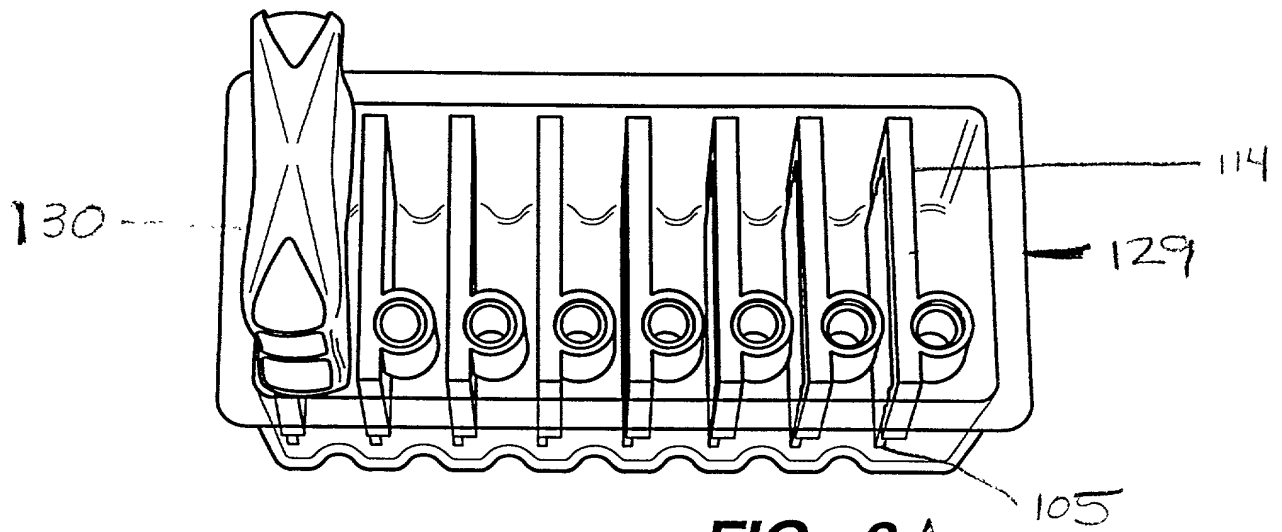


FIGURE 11K







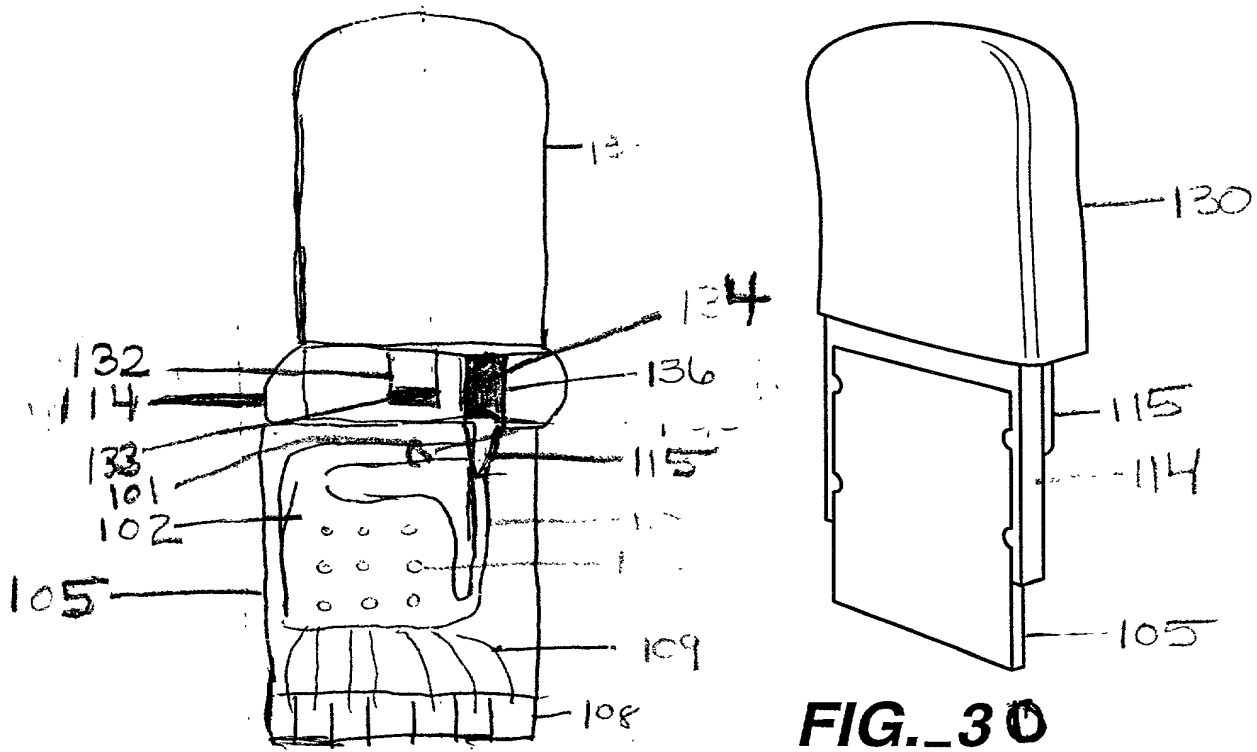
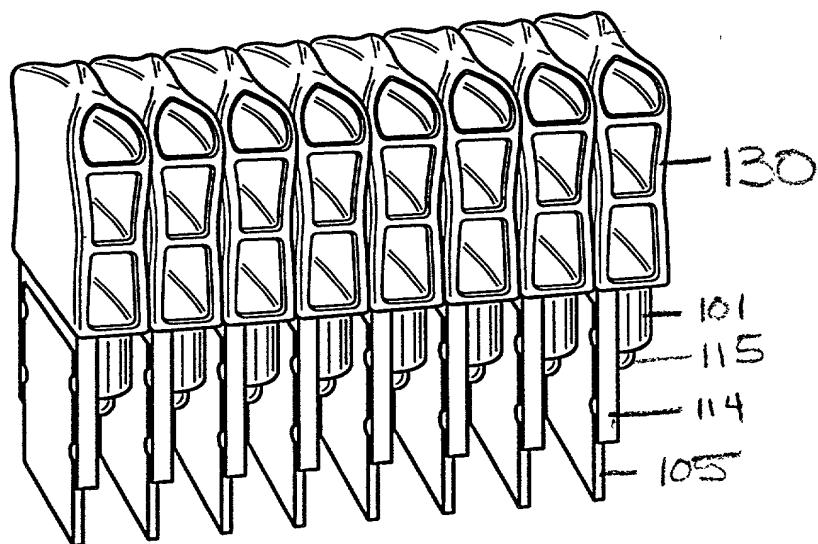
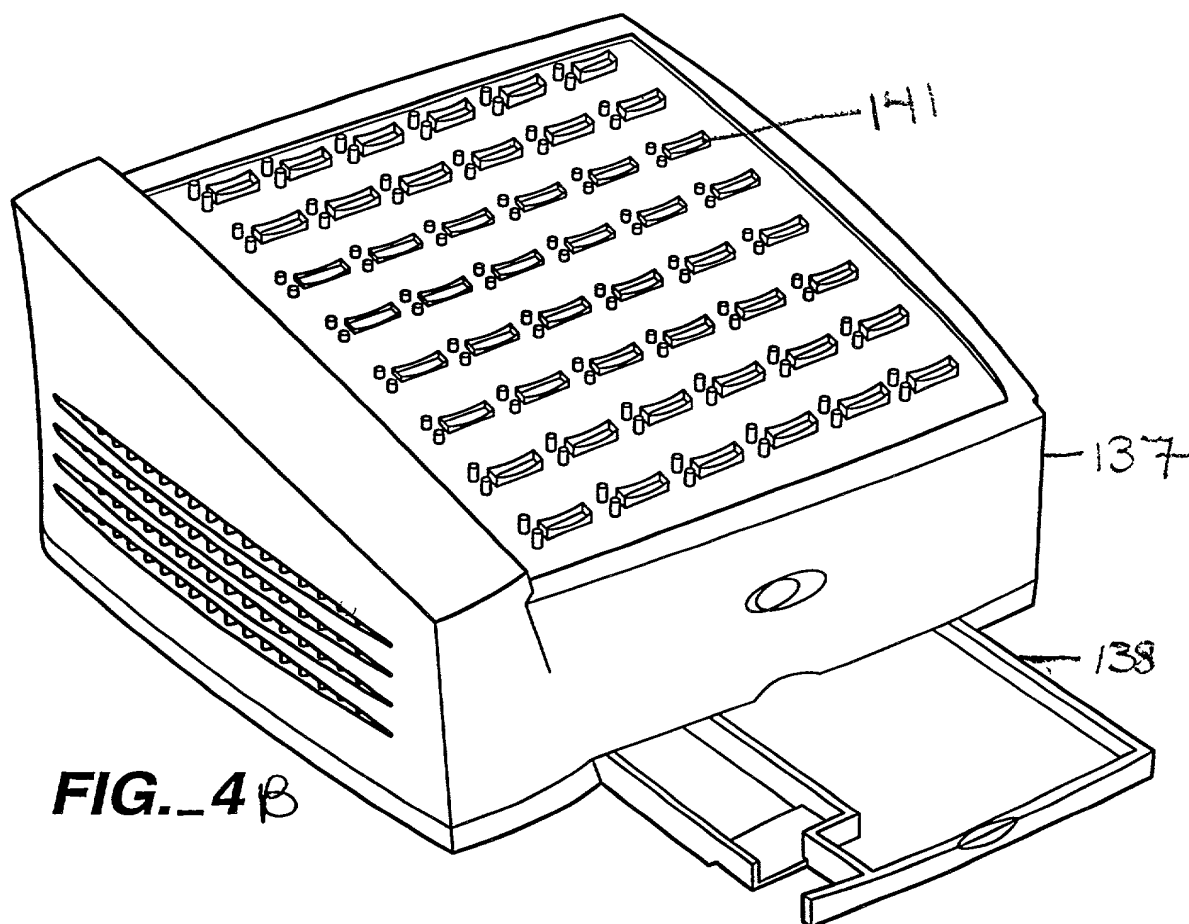
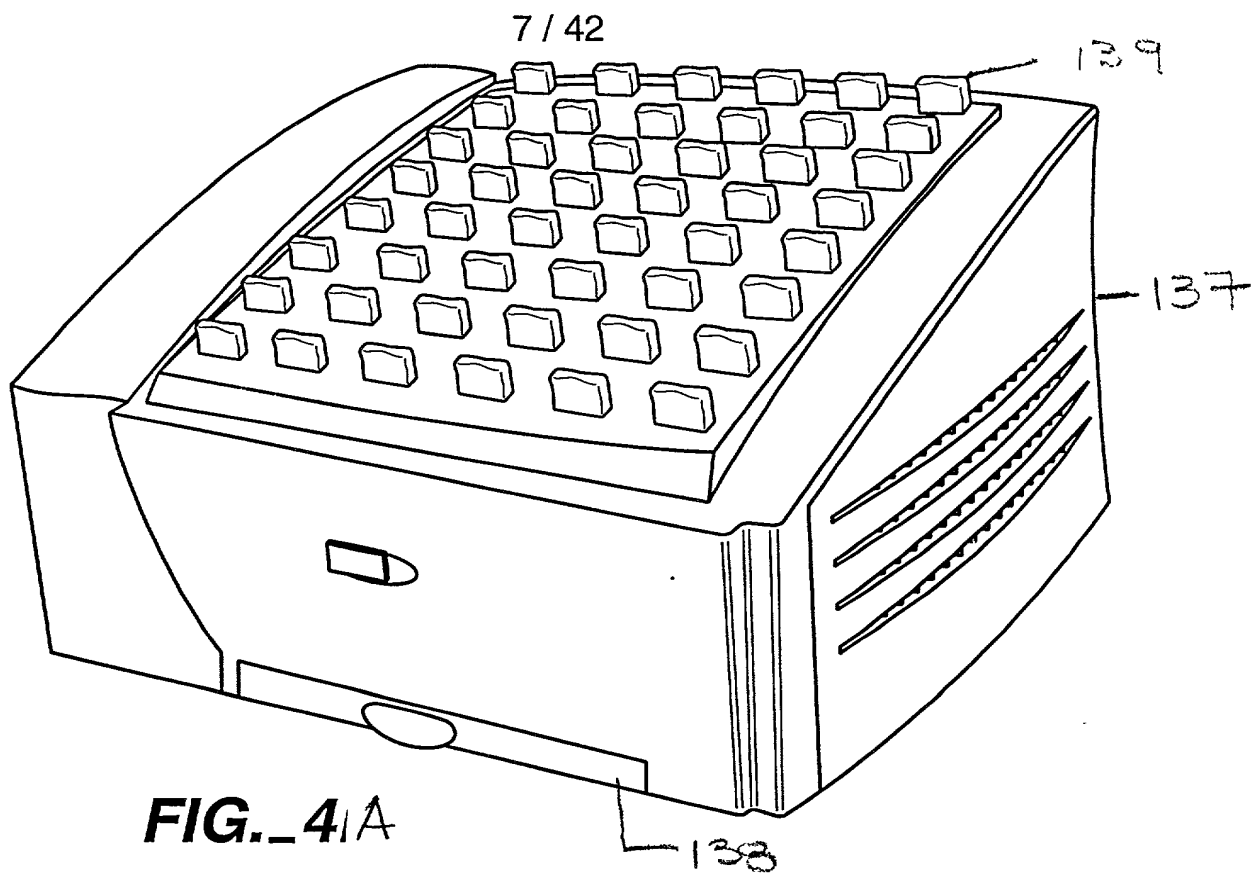
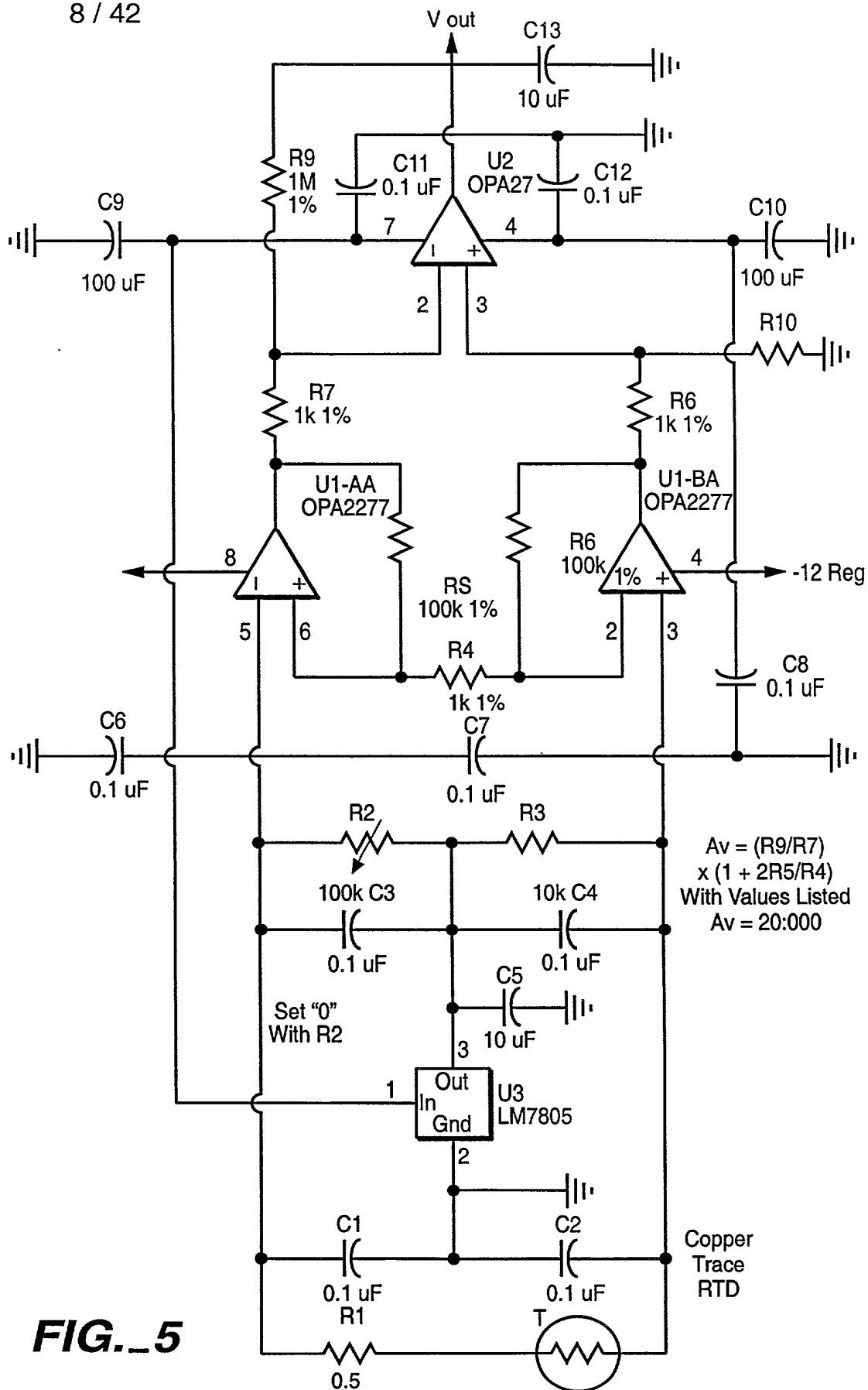


Fig 3C





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**FIG. 5**

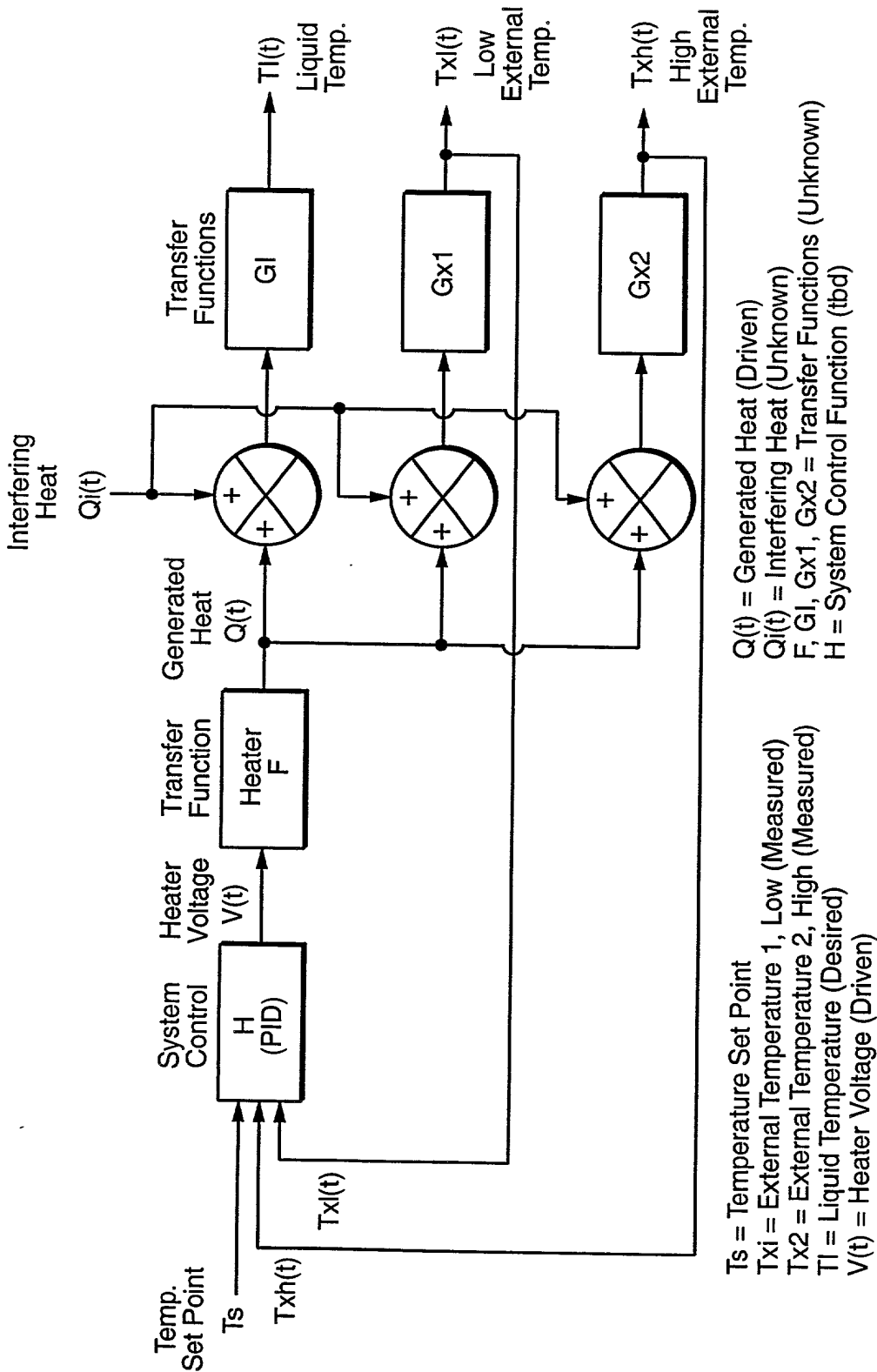


FIG. 6

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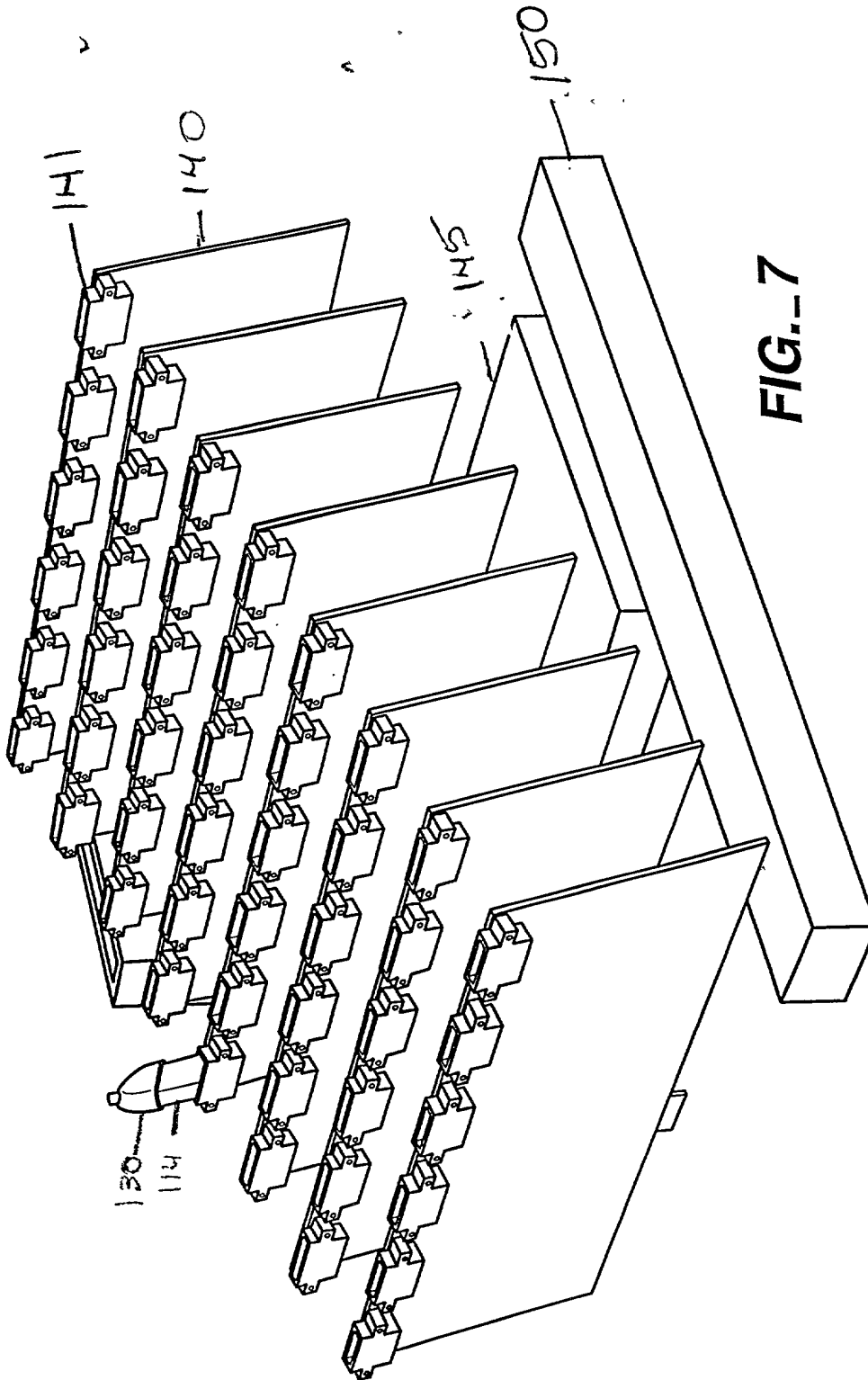
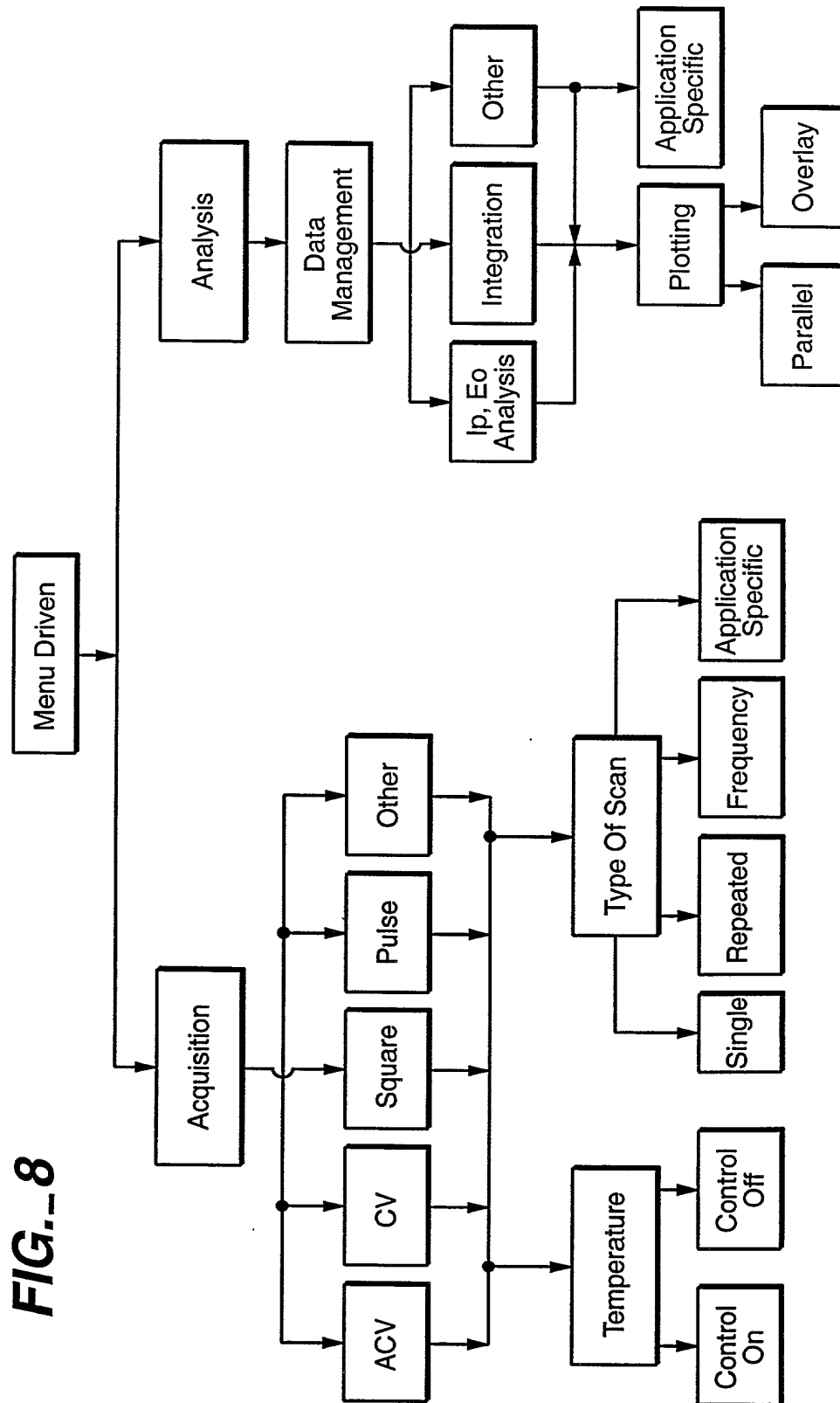


FIG.-7



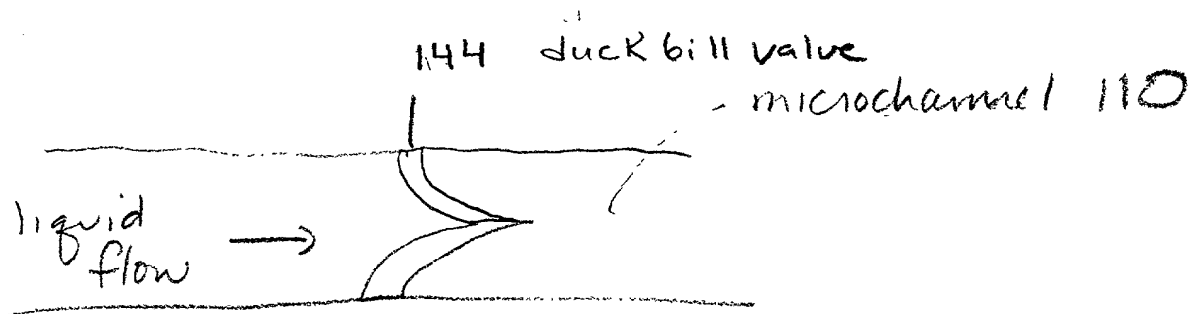


Fig 9A

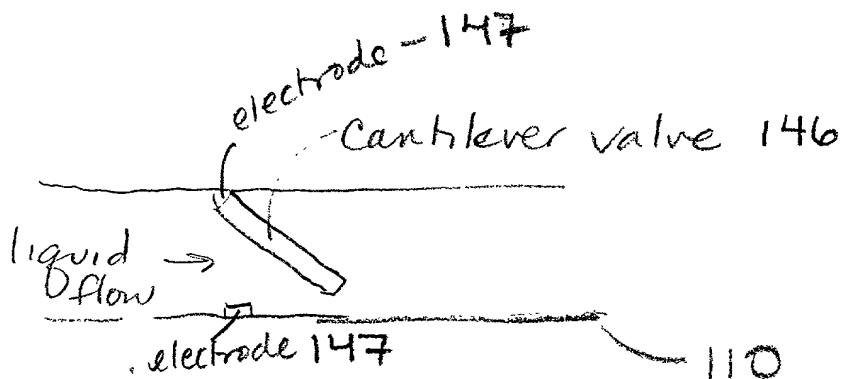


Fig 9B

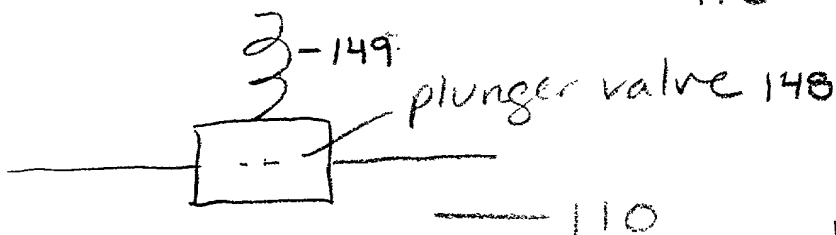


Fig 9C

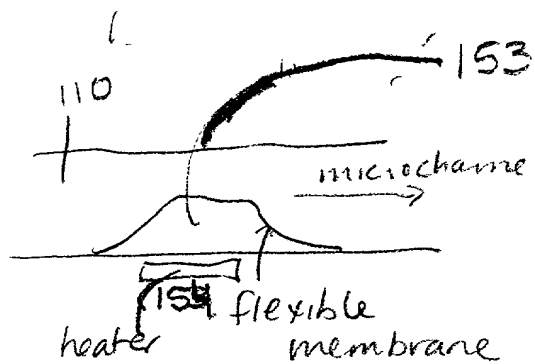


Fig 9F

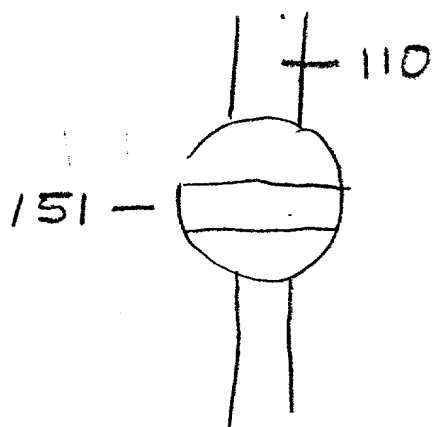


Fig 9D

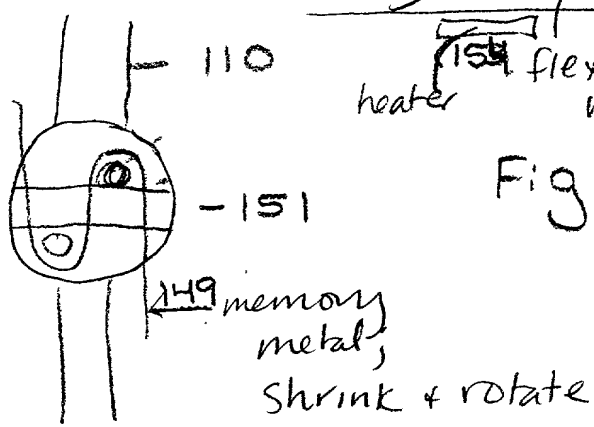


Fig 9E

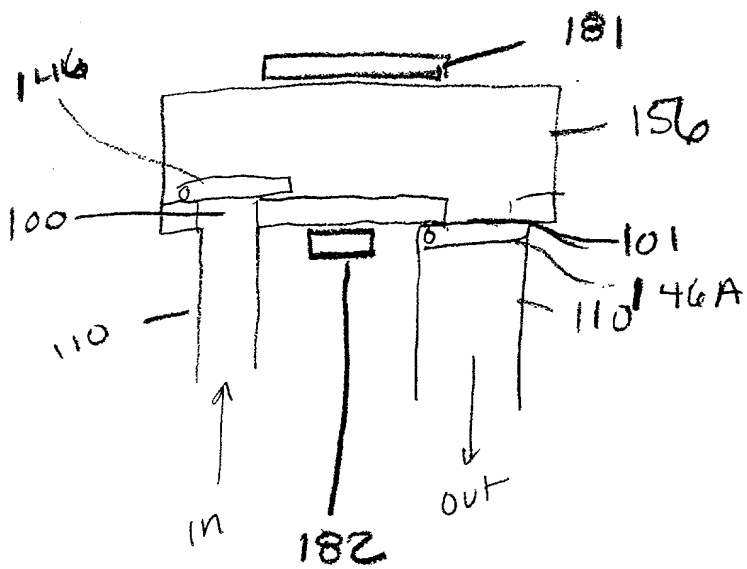


Fig 9 G

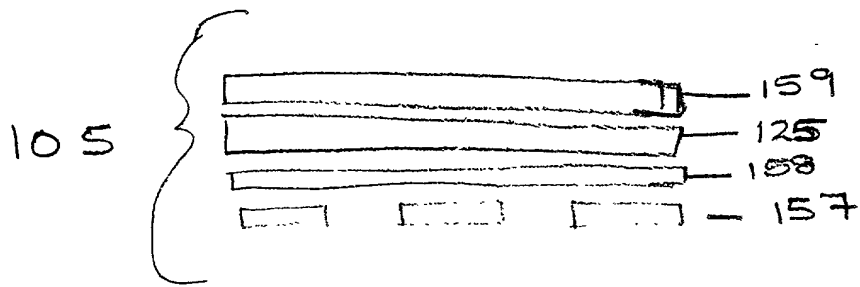


Fig. 10 A

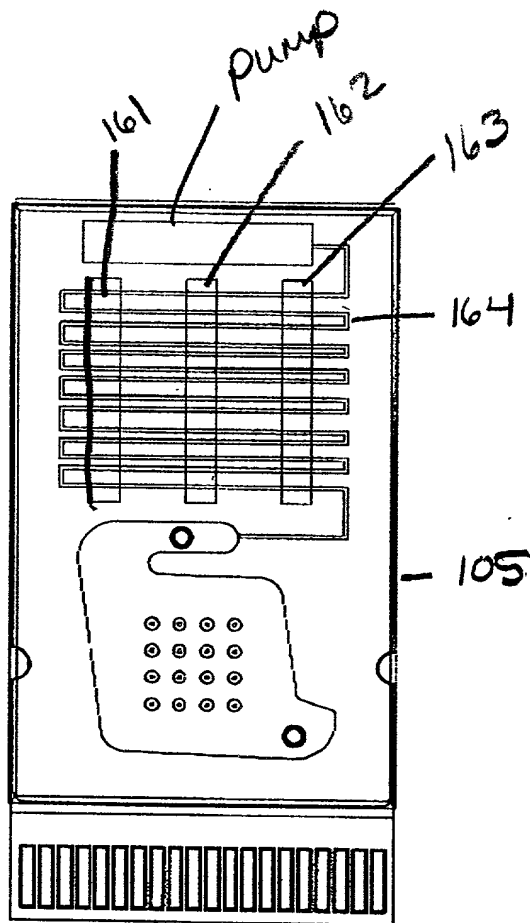


Fig 10 B

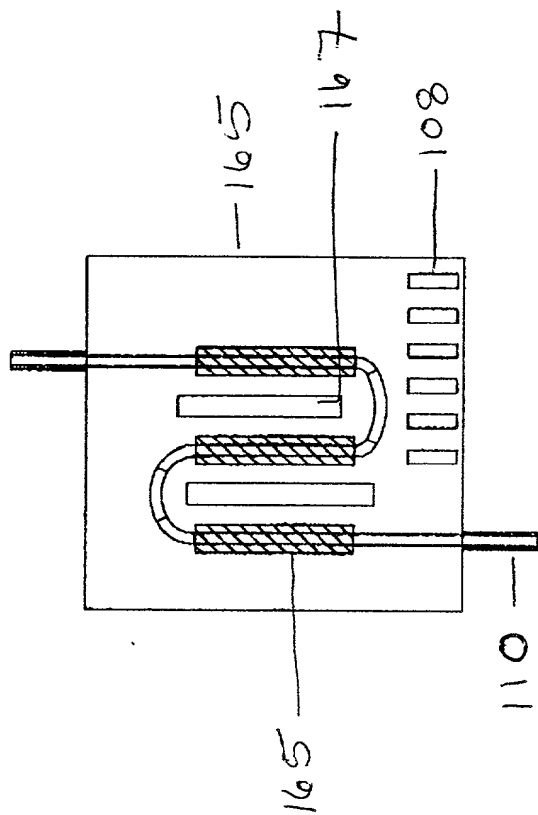
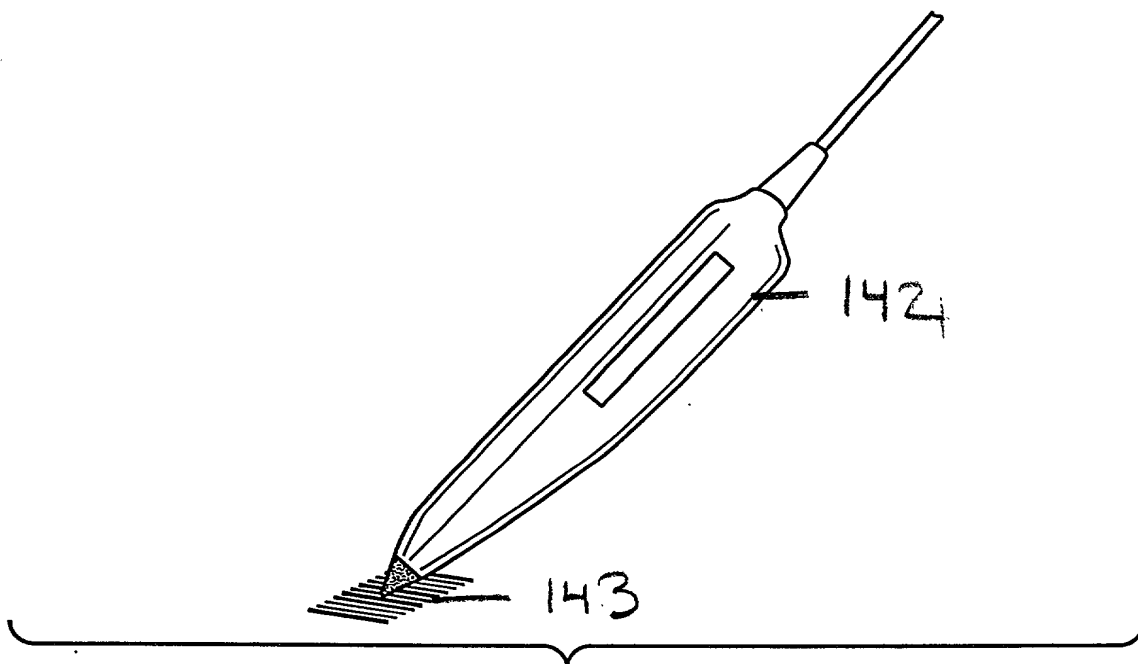


Fig 10C

- Bar coded “reference” sheet, stored in tray under unit, with bar coded protocols, bar coded well and slot id’s, bar coded commands (e.g. “cancel”, “done”, etc.)
- Standard bar code wand (preferably with built-in decoder), housed in the tray (hence hidden when not in use)
- Serial (RS-232/485) interface (preferred), or “keyboard wedge”
- Multi-code support (Code 39, Code 128, etc.)
- Bar code on chip carrier (1 code per “8 pack”), identifying test, batch, etc.
 - Peel off labels, with same code as on carrier, with each “8 pack”

**FIG. 11**

■ Bar code usage scenario

- User fills "8-pack" (all 8, or partially) from a 96 well plate, or from individual sample containers (PCR tubes, vacutainers, etc.)
- Pull out tray (with bar code reference sheet) and grab wand
- Scan "start" code
- Scan protocol code from sheet (will remain in effect until "done" is scanned)
- Scan chip code from carrier (will remain in effect until "done" is scanned)
- For each cartridge, user will
 - insert the cartridge in an open slot. Unit senses new chip automatically
 - scan the sample ID by either
 - scanning 96 well plate bar code from plate and well code from sheet
 - or scanning unique sample ID from container
 - or scanning "no ID" from reference sheet
- Scan "done" code. The protocol can't now be started on these cartridges

FIG. 12

■ Bar code concept benefits

- No keyboard entry (all-routine setup can be entered via bar coding)
- All routine entries accomplished while in front of unit (no going back & forth between PC & Hydra)
- All bar code entries done from small, flat surface in front of unit
- No need to label each chip or each slot (which would compromise appearance)
- Uses small unobtrusive bar code wand, hidden when not in use
- Is flexible with respect to sample container (tube, 96 well plate, etc.), chip usage (by row of 8, or by individual chip), and lab bar coding method

FIG. 13

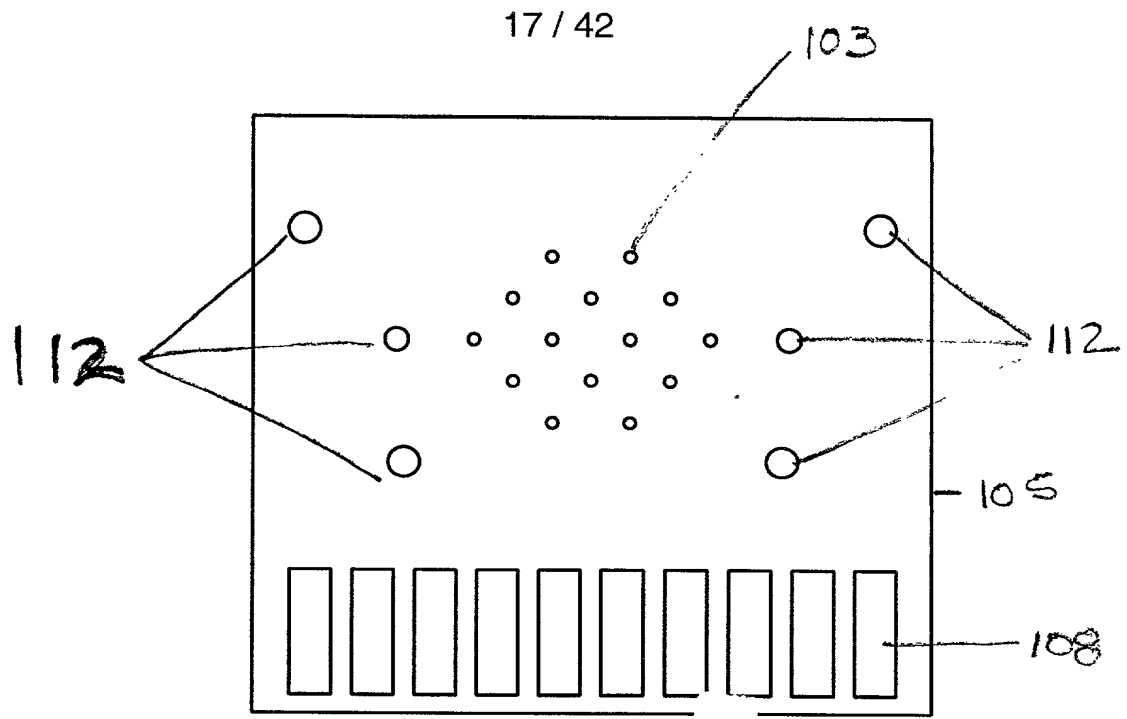


FIG. 14A

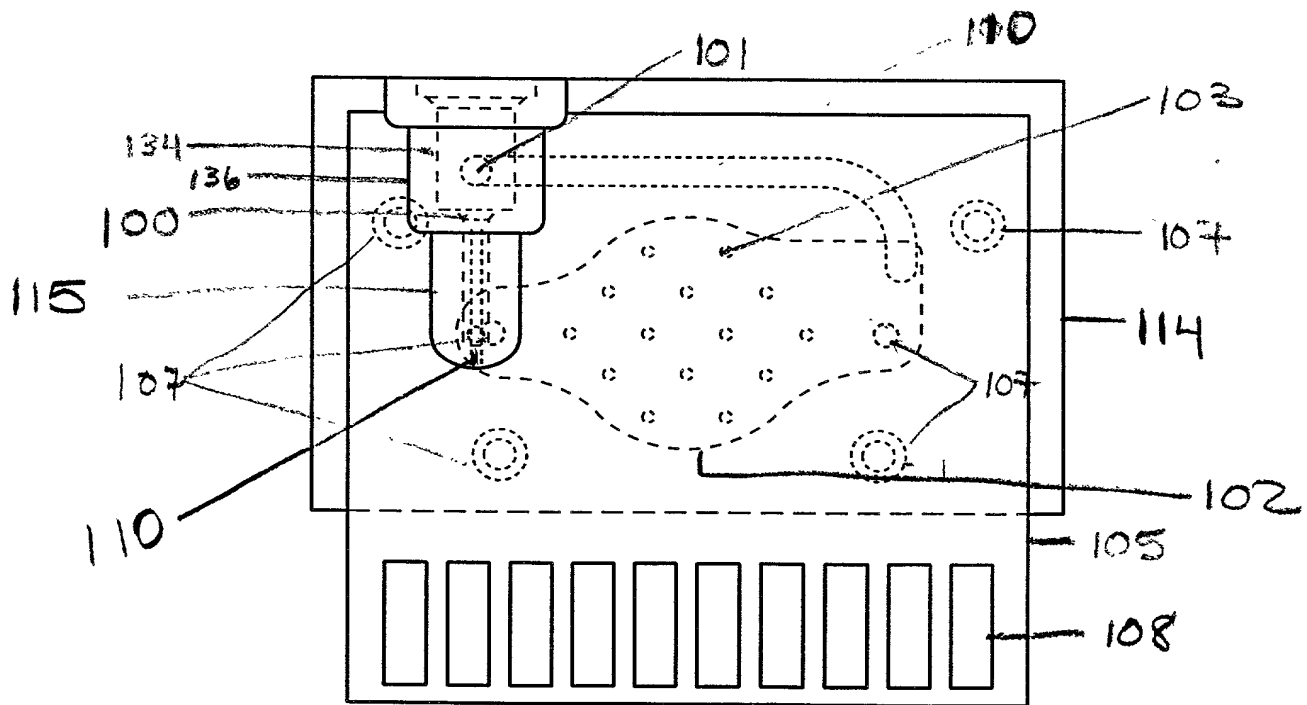


FIG. 14B

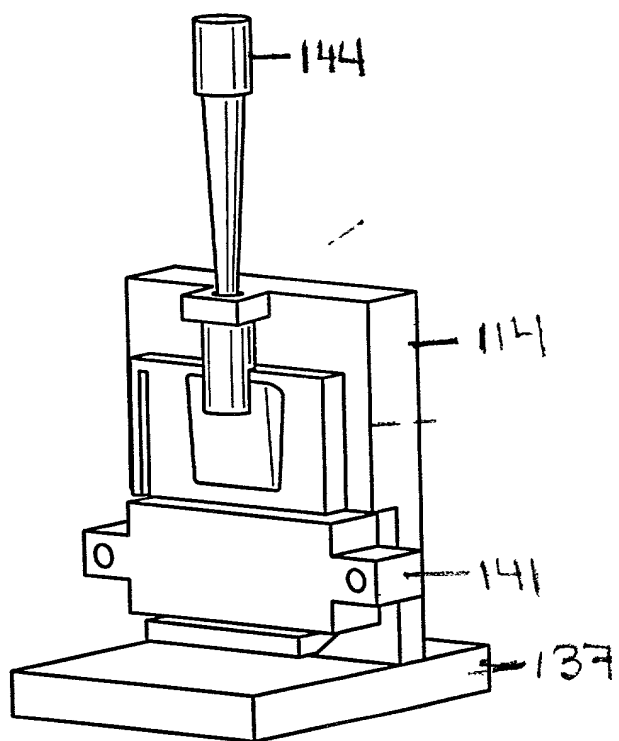


FIG. 15A

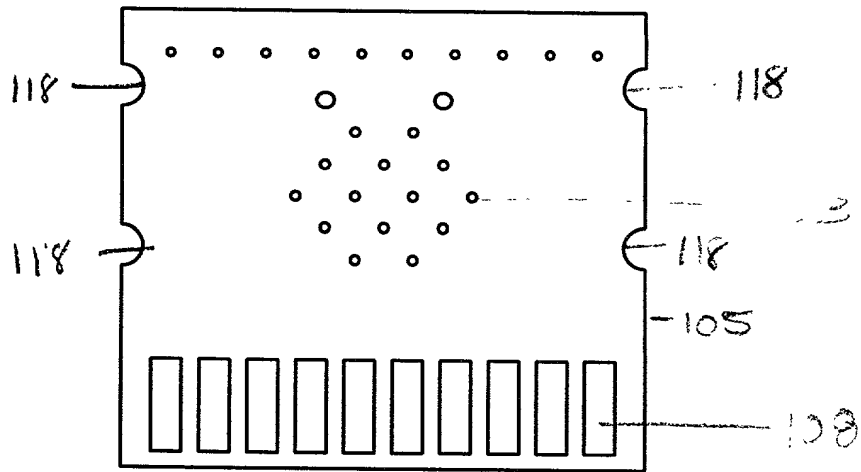


FIG. 15 R

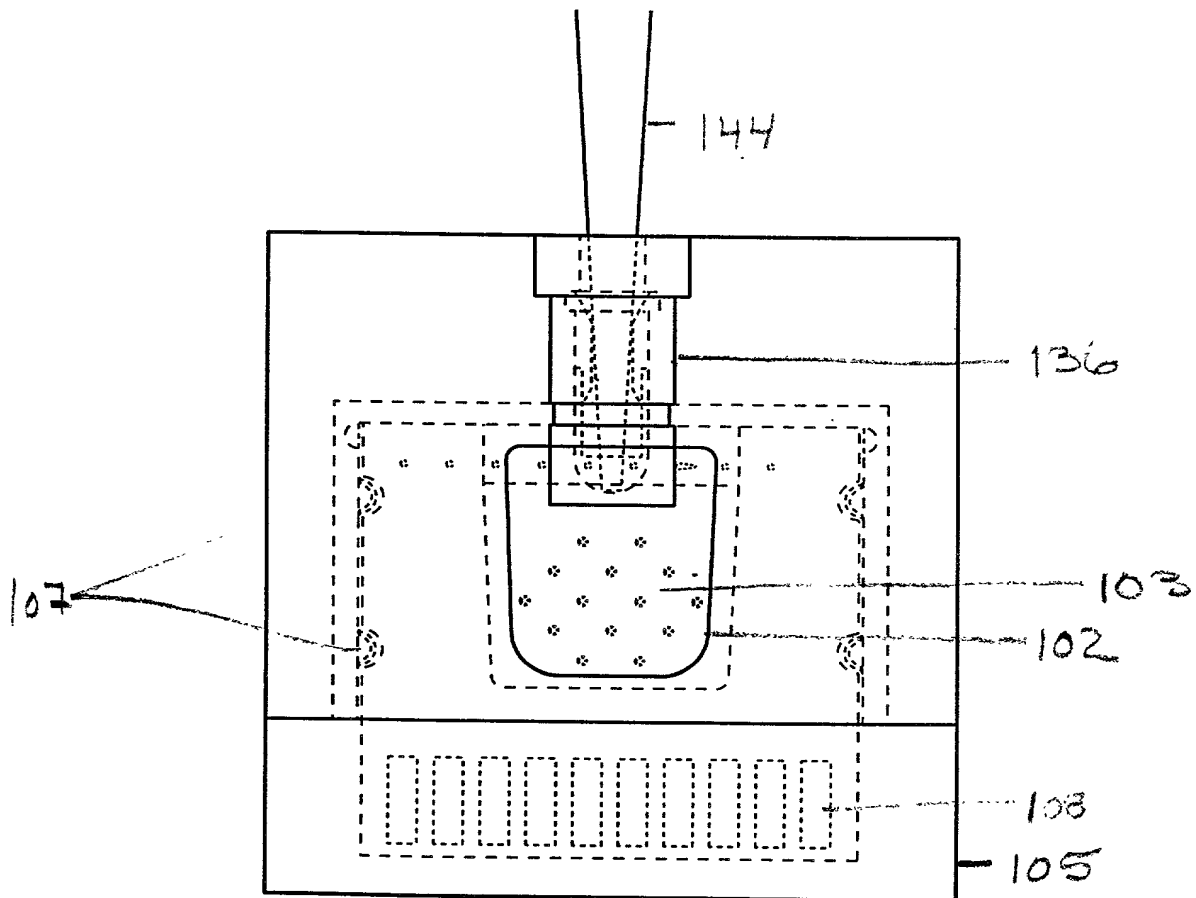


FIG. 15 C



A Sine Wave And Its Corresponding Vector Notation

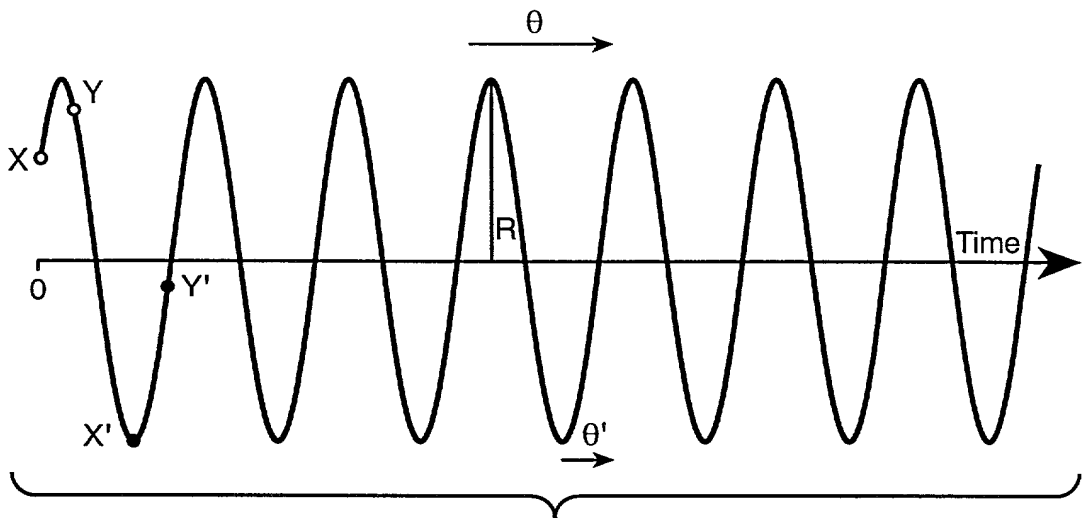
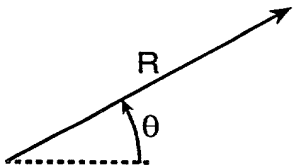
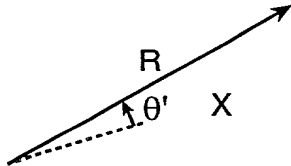


FIG. 16

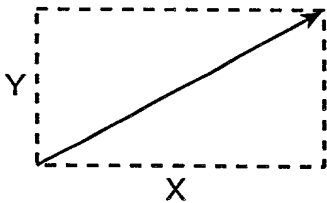
Polar Coordinates



Polar Coordinates'



Cartesian Coordinates



Cartesian Coordinates'

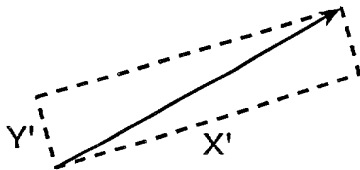
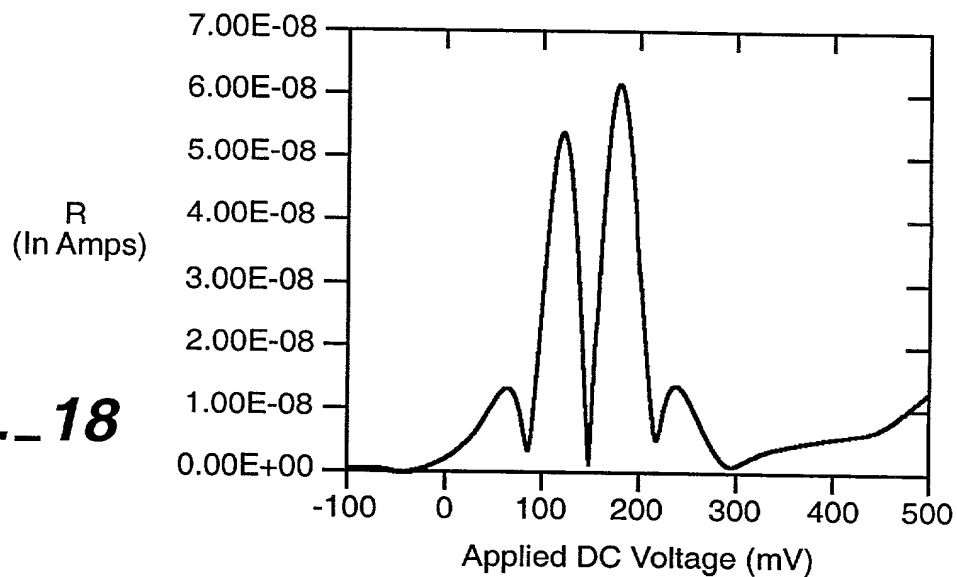
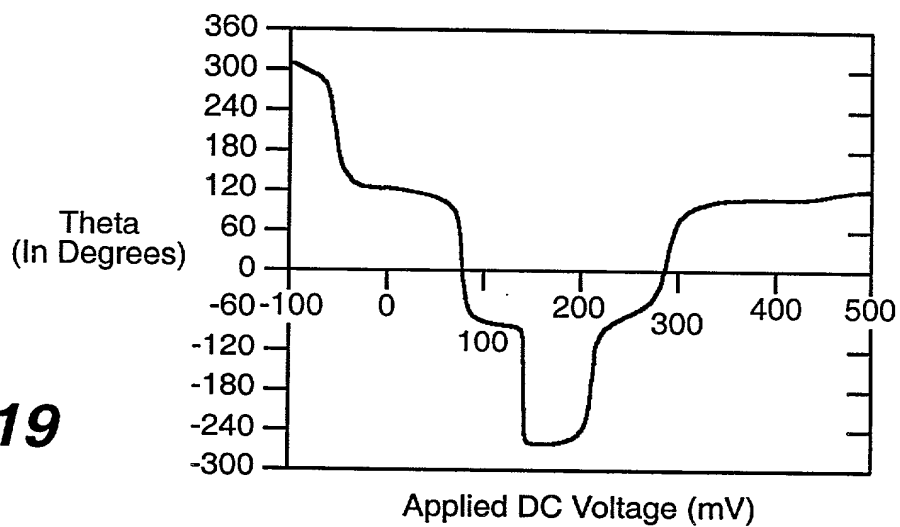
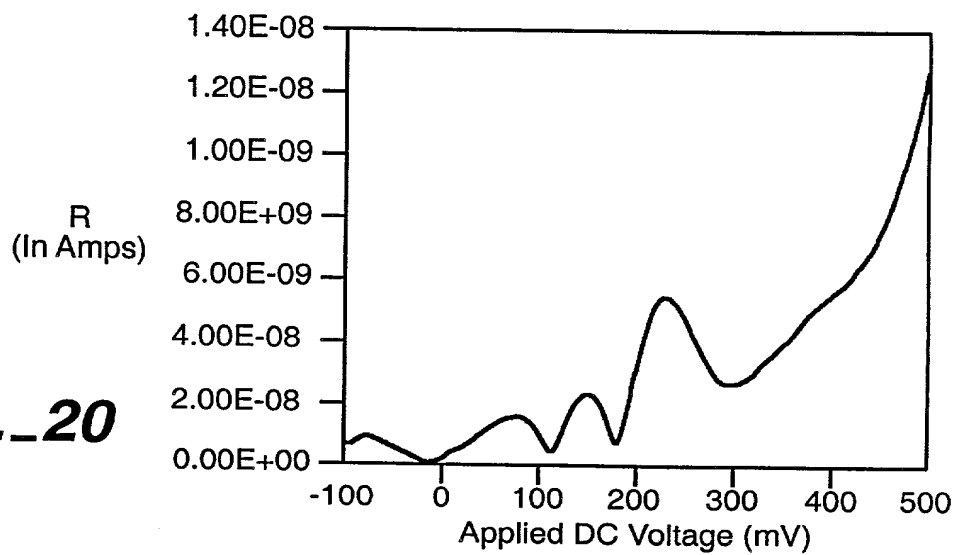


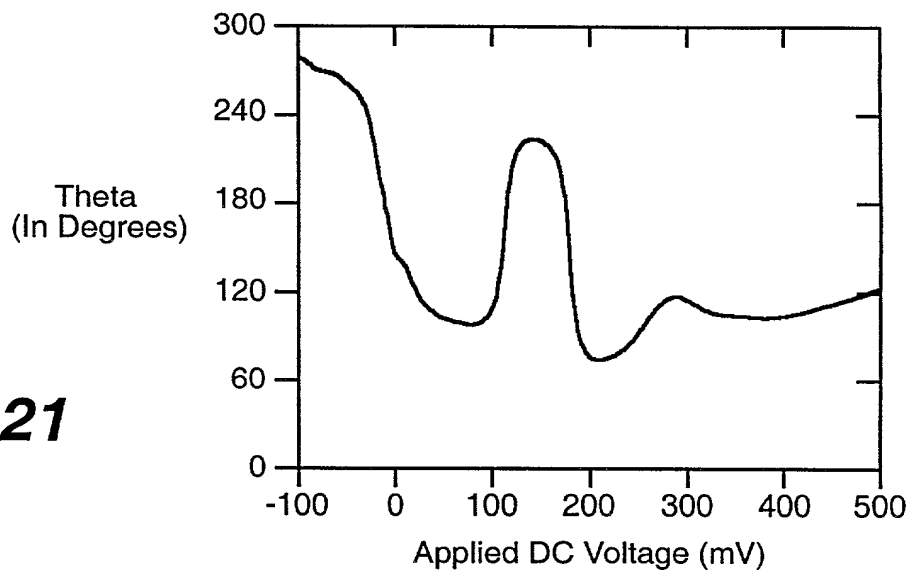
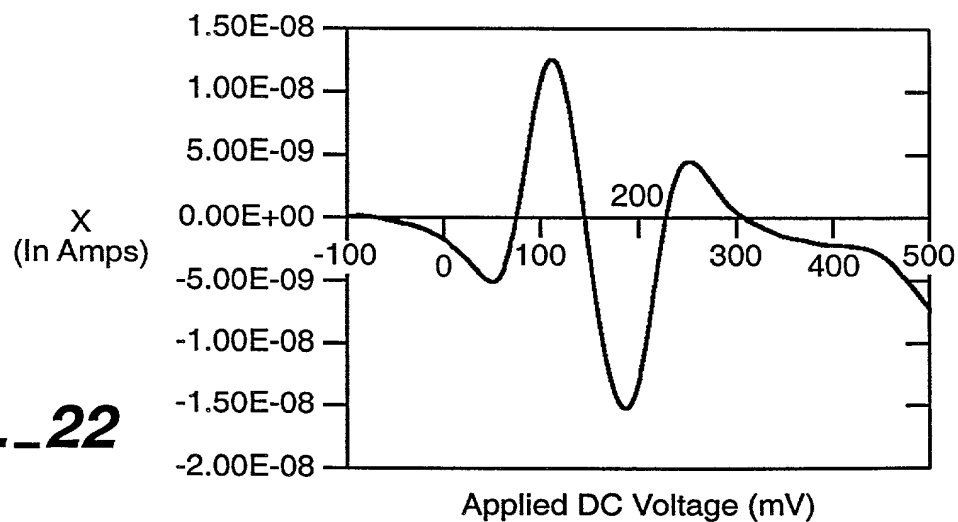
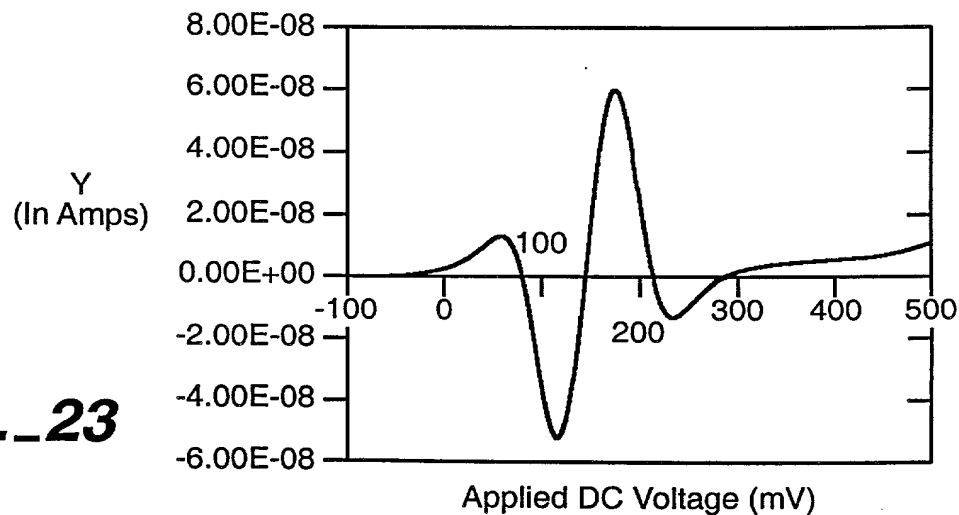
FIG. 17

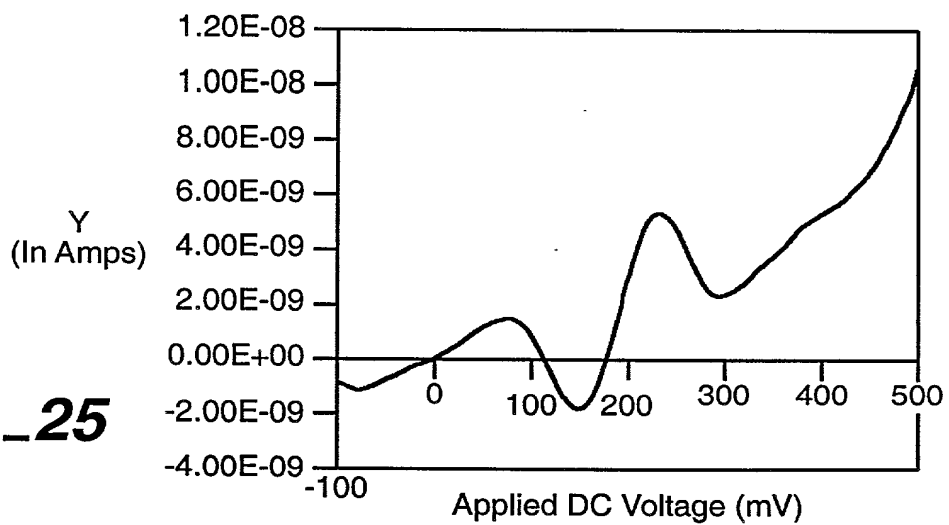
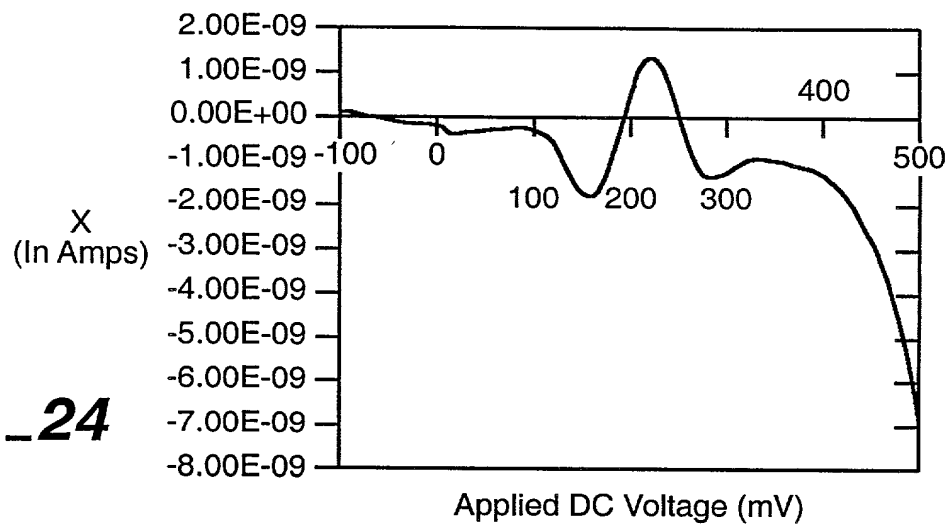


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FIG._18**FIG._19****FIG._20**

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FIG._21**FIG._22****FIG._23**



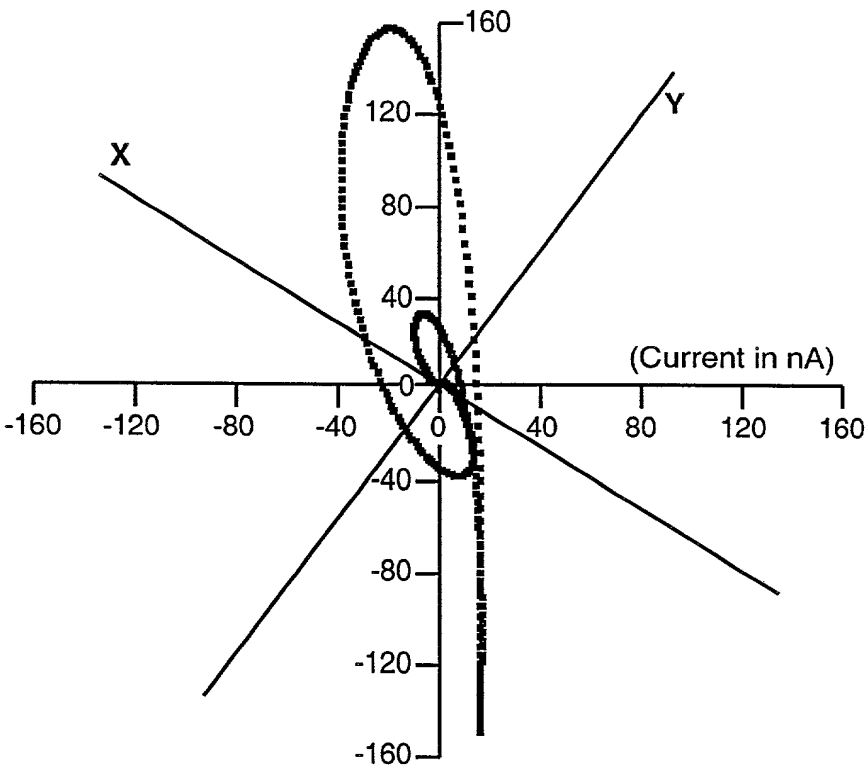
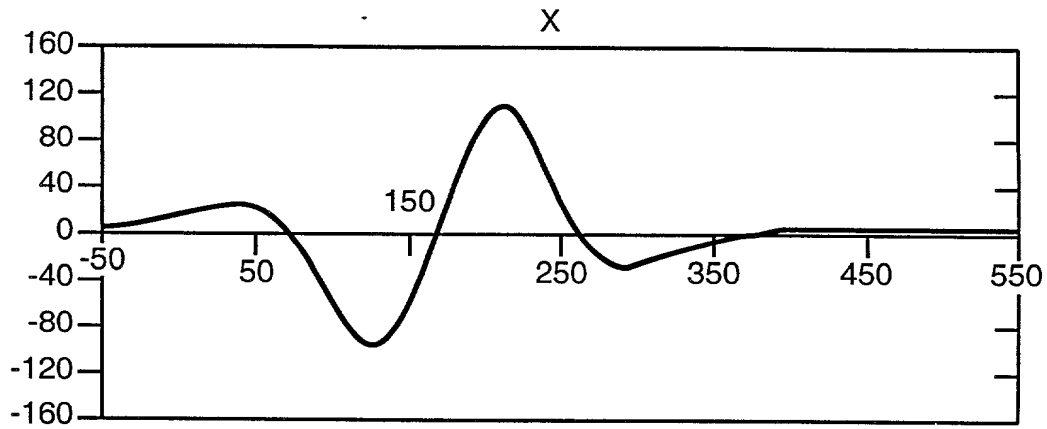
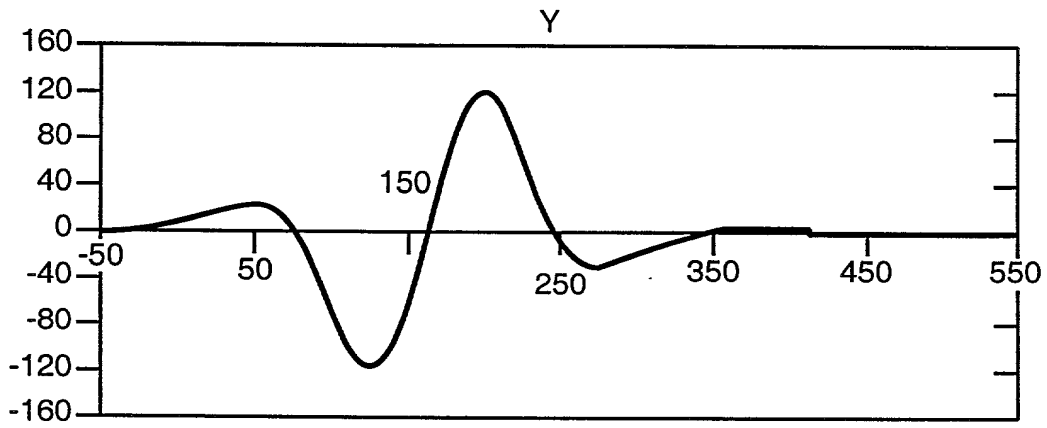
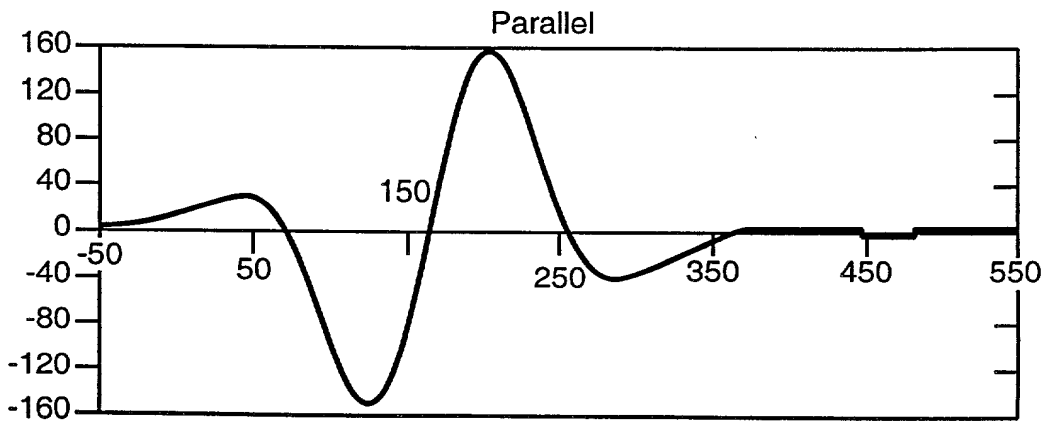
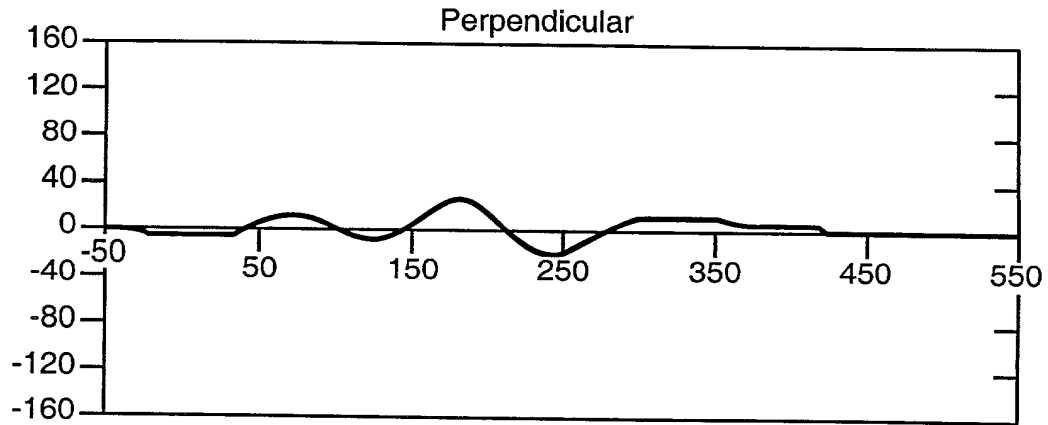
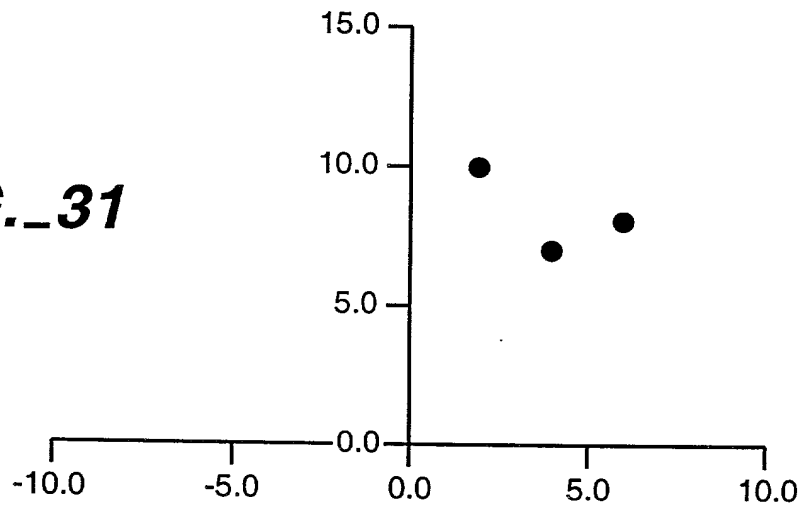
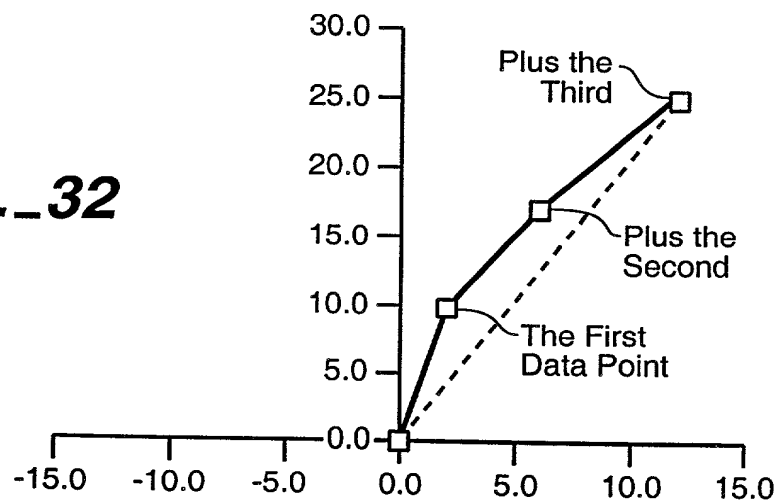


FIG. 26

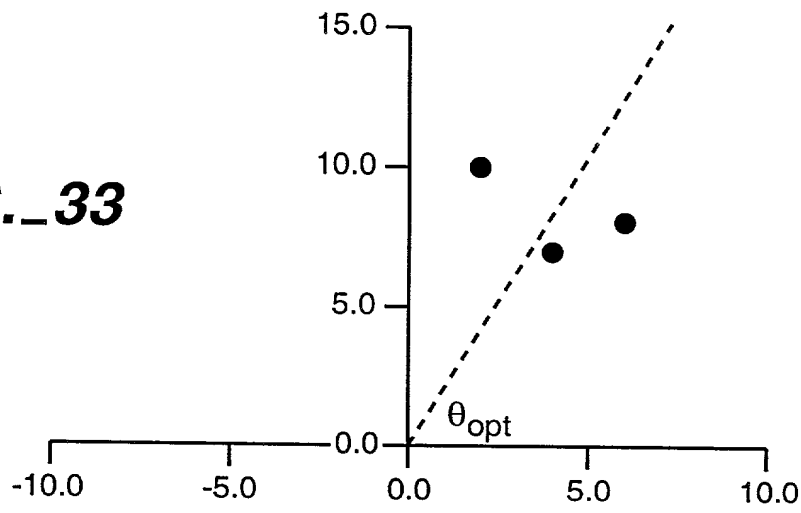
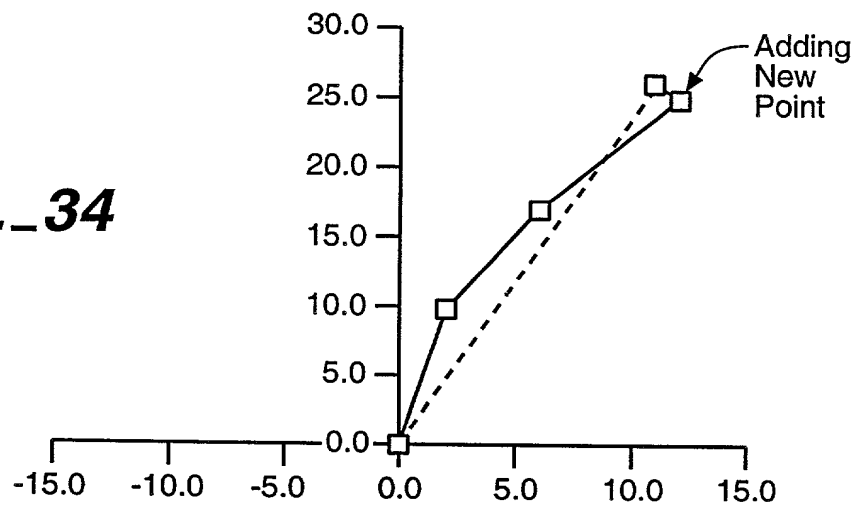
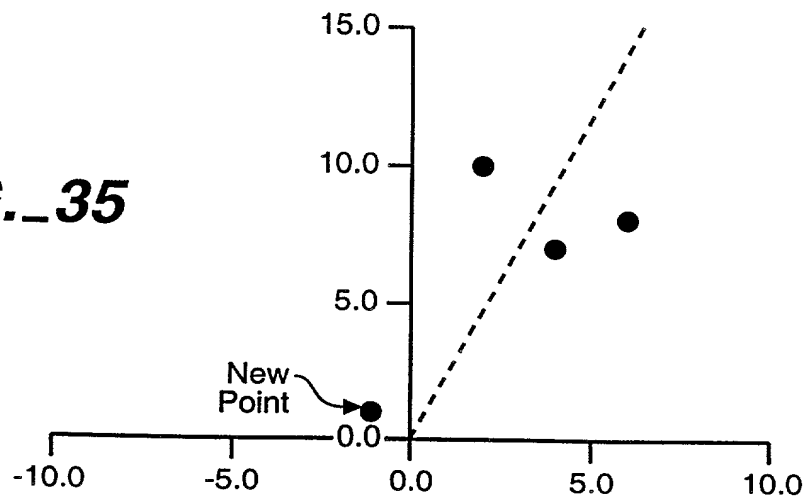
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**FIG._27****FIG._28****FIG._29**

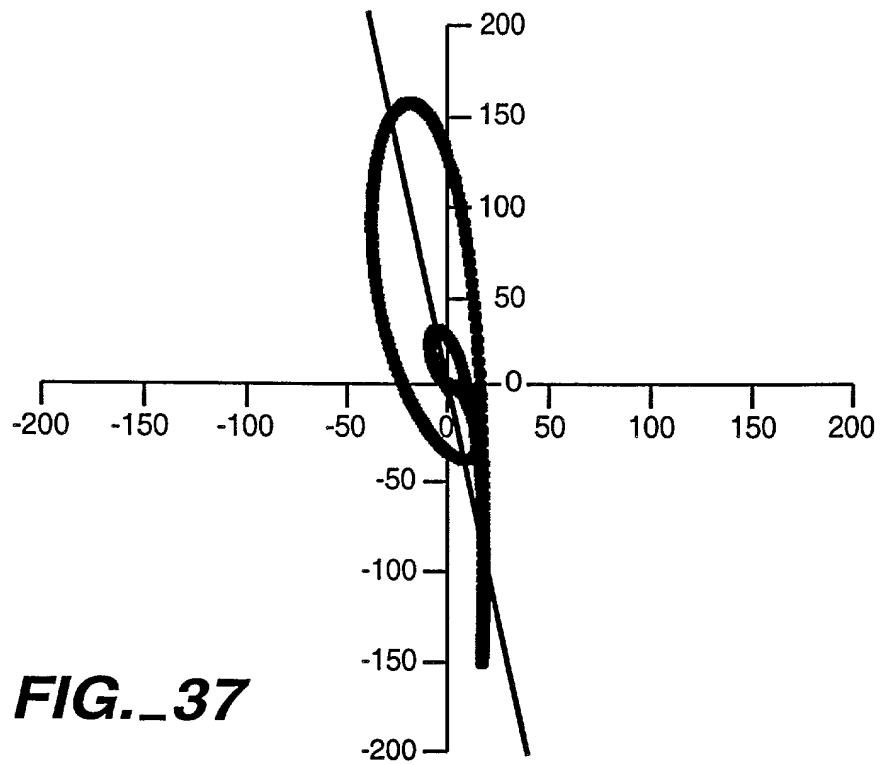
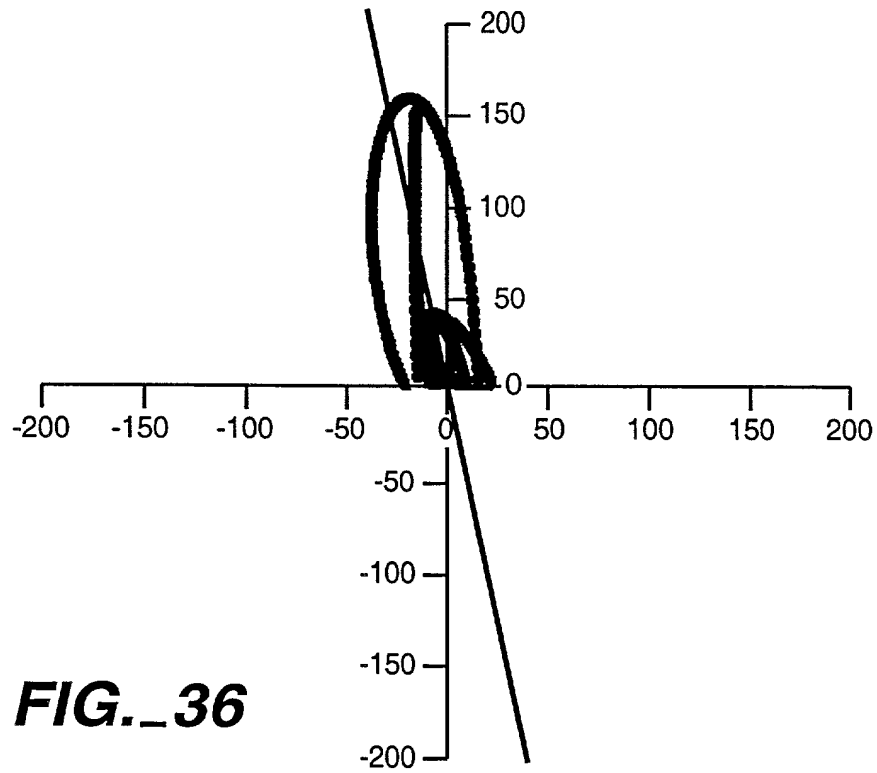
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**FIG._30****FIG._31****FIG._32**

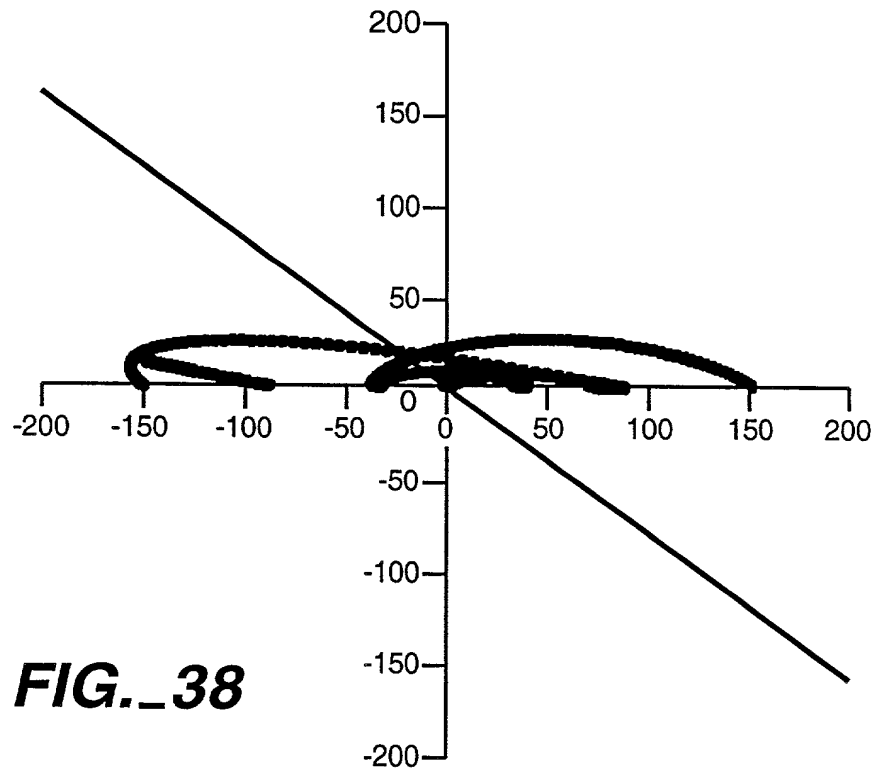
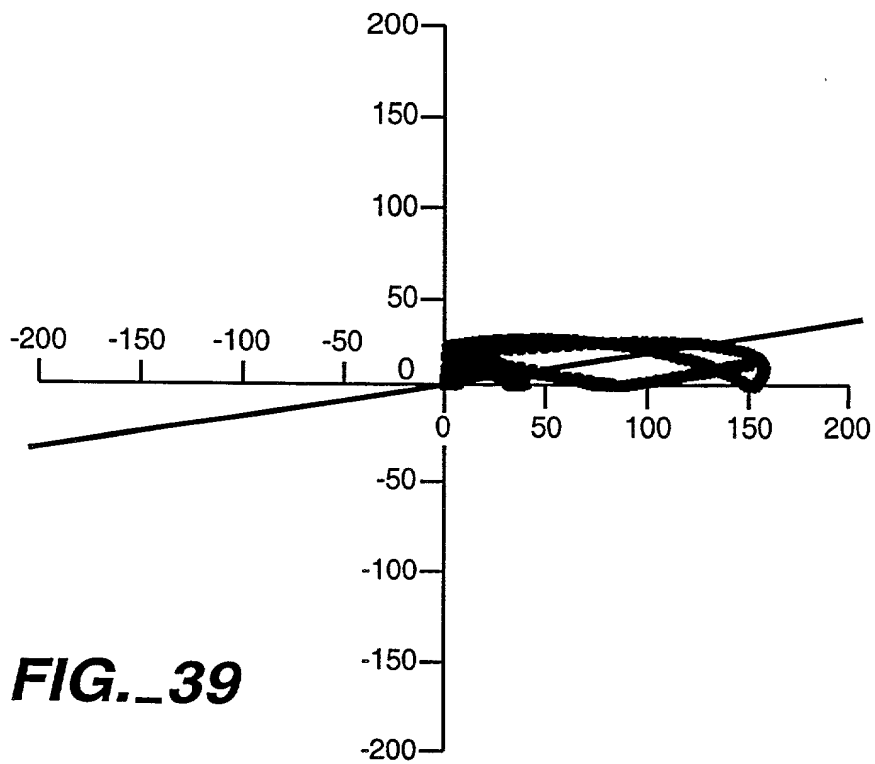
27 / 42

FIG._33**FIG._34****FIG._35**

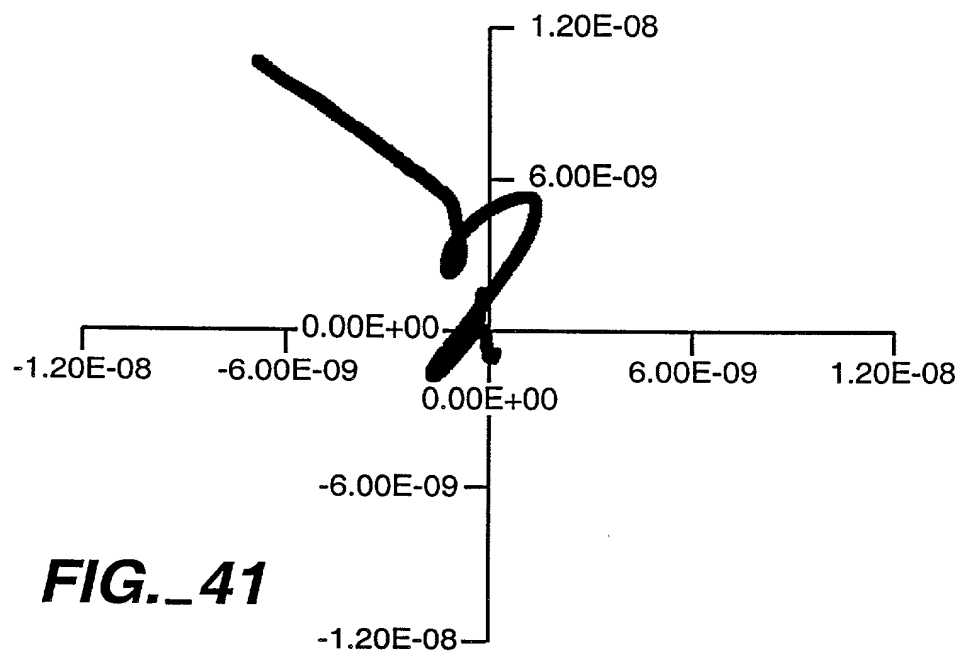
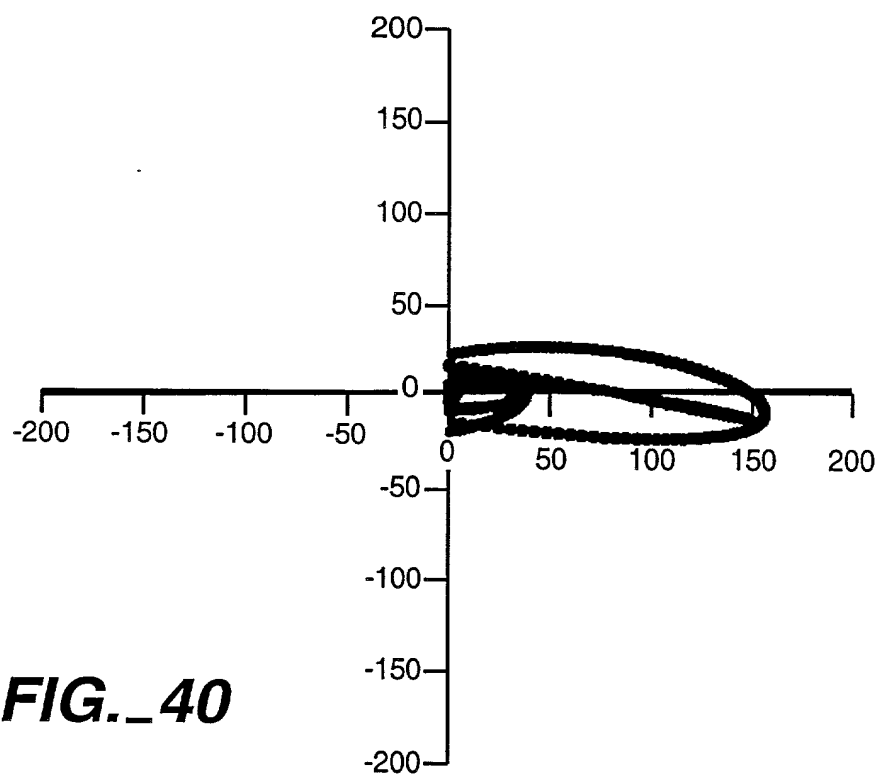
28 / 42



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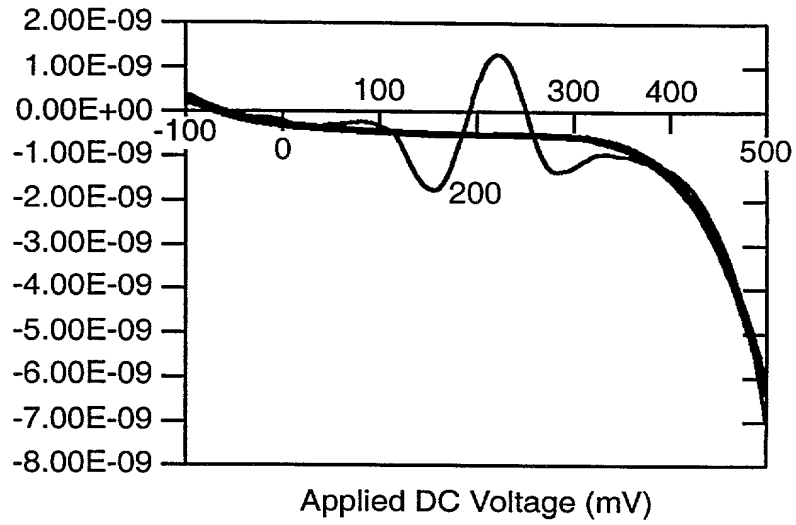
**FIG._38****FIG._39**

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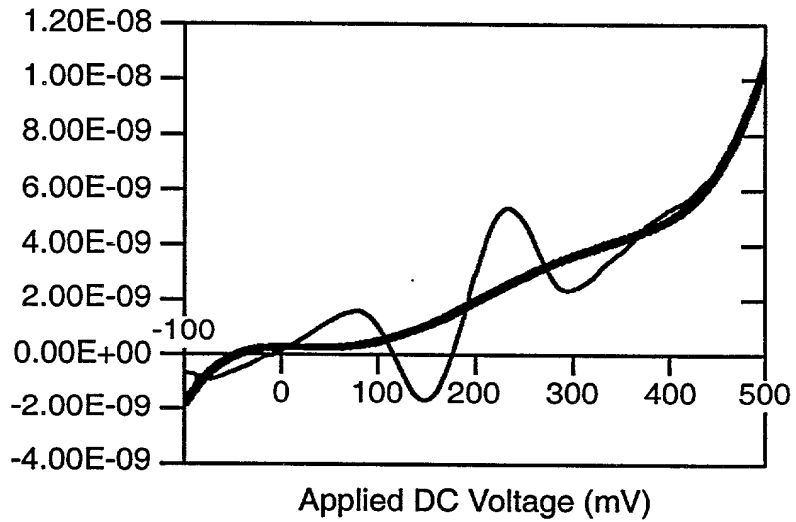


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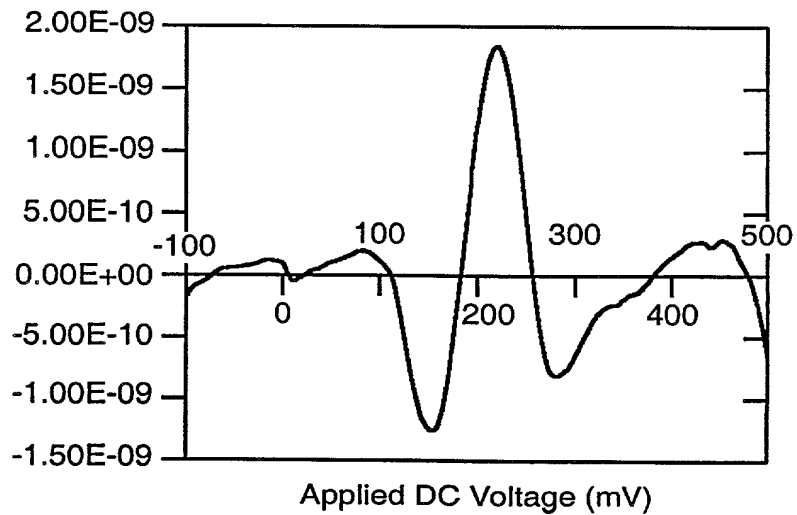
Scan Viewed
Along
0 Degrees

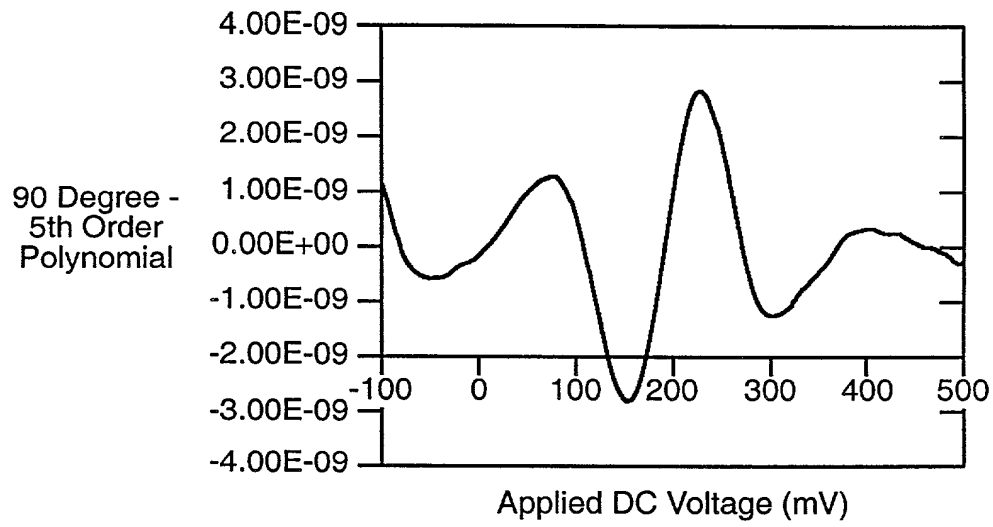
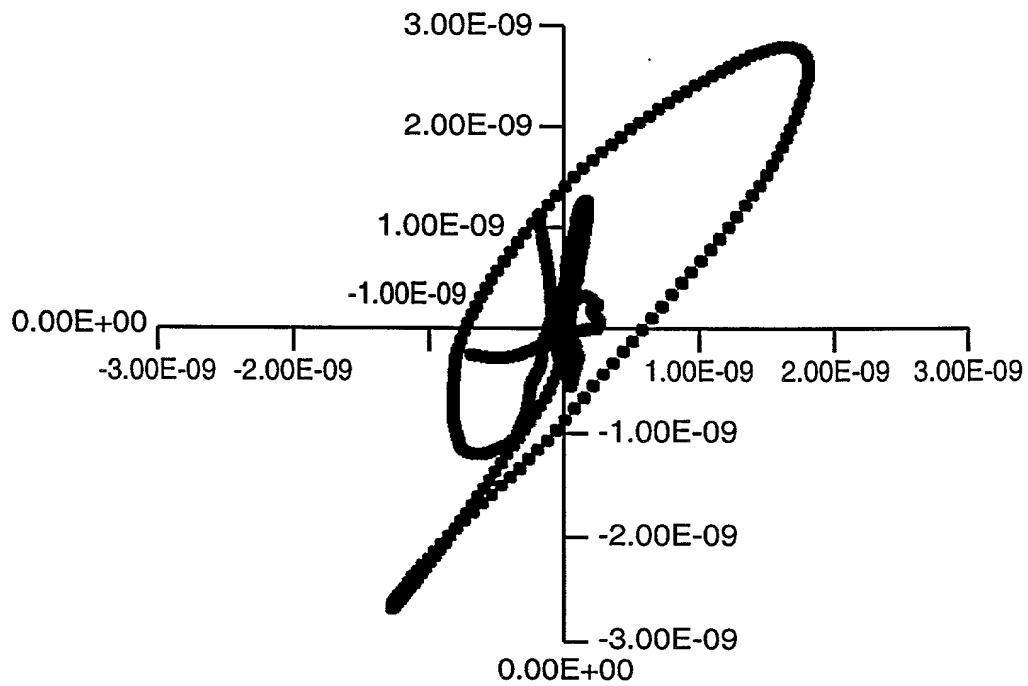
FIG._42

Scan Viewed
Along
0 Degrees

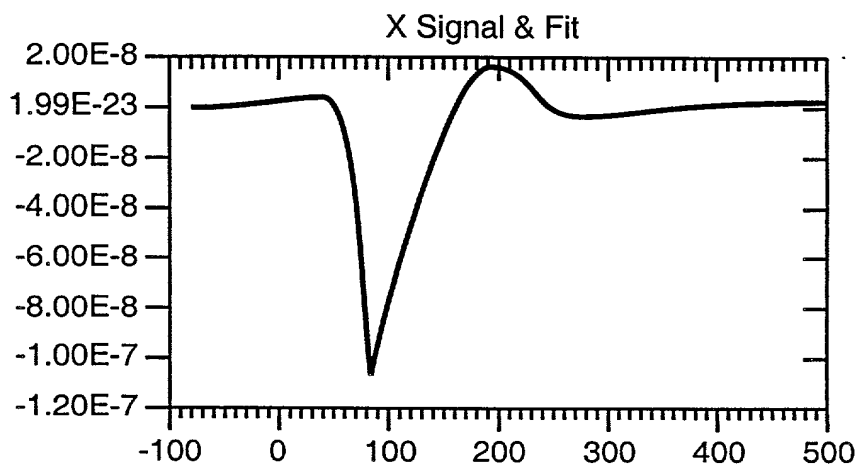
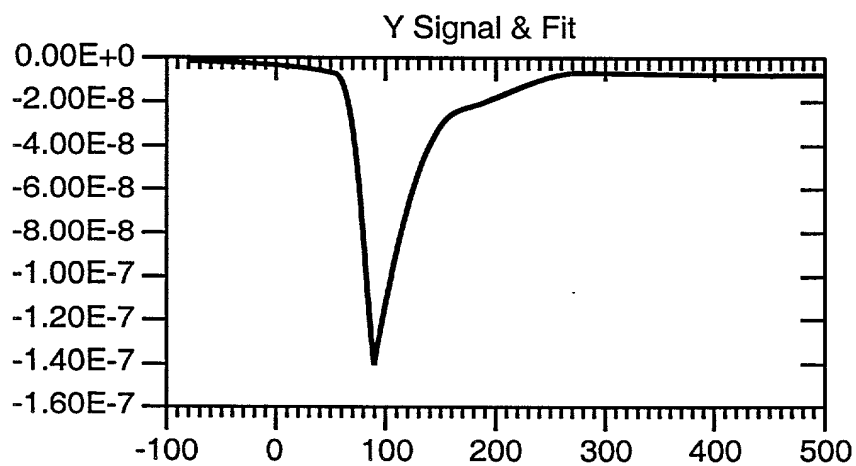
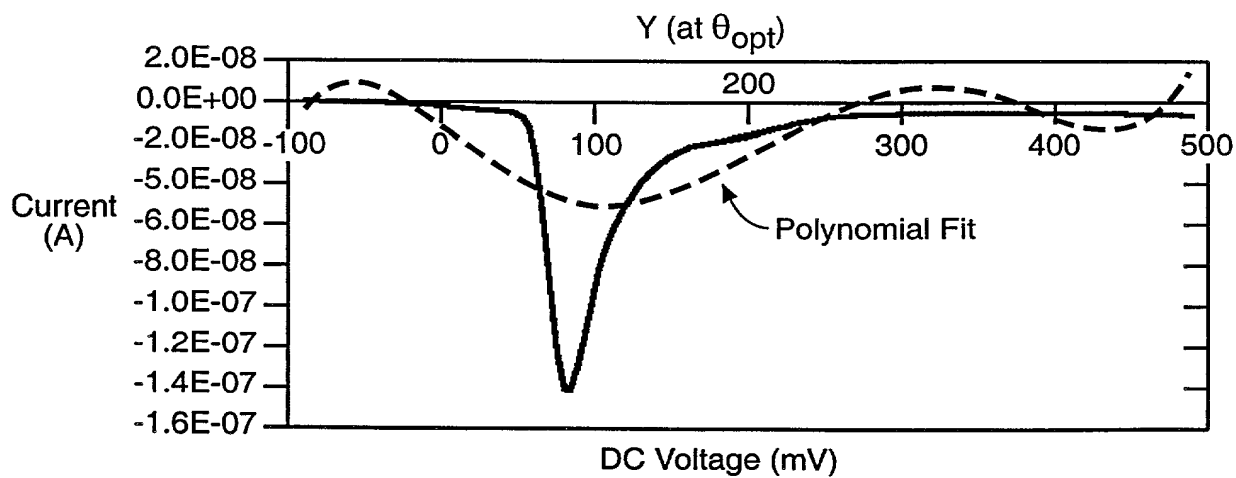
FIG._43

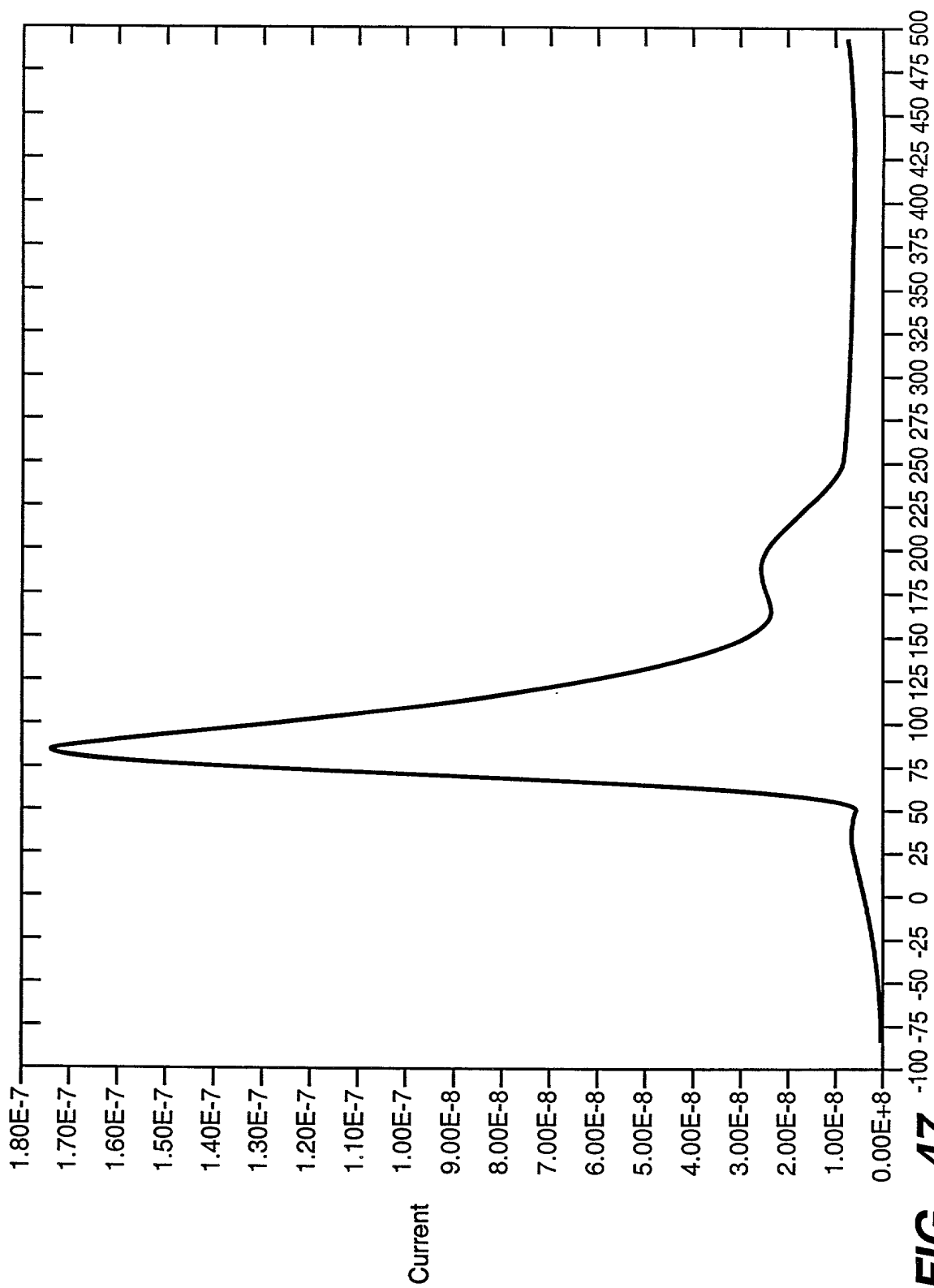
0 Deg. -
5th Order
Polynomial

FIG._44

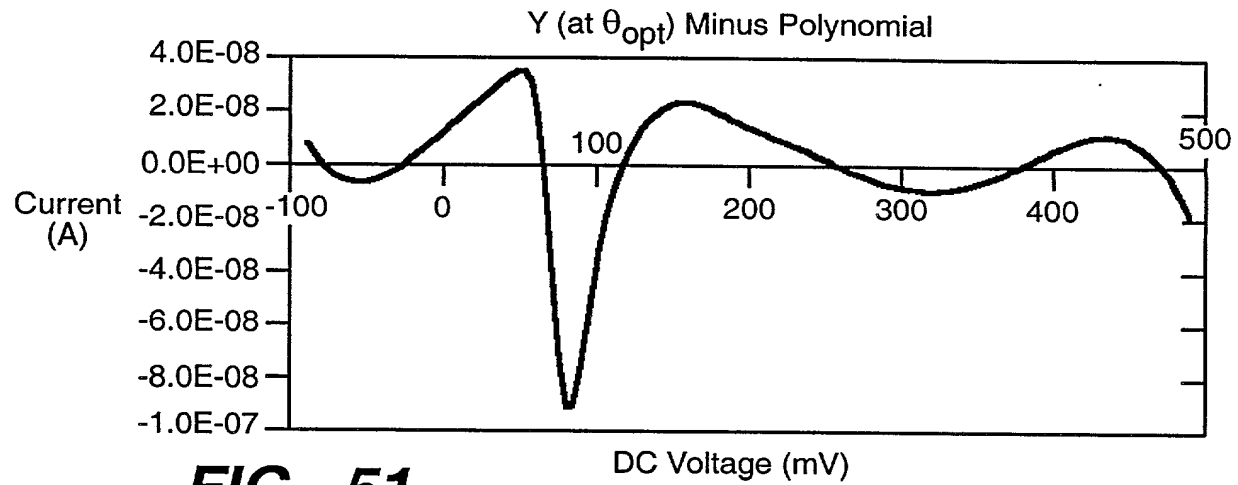
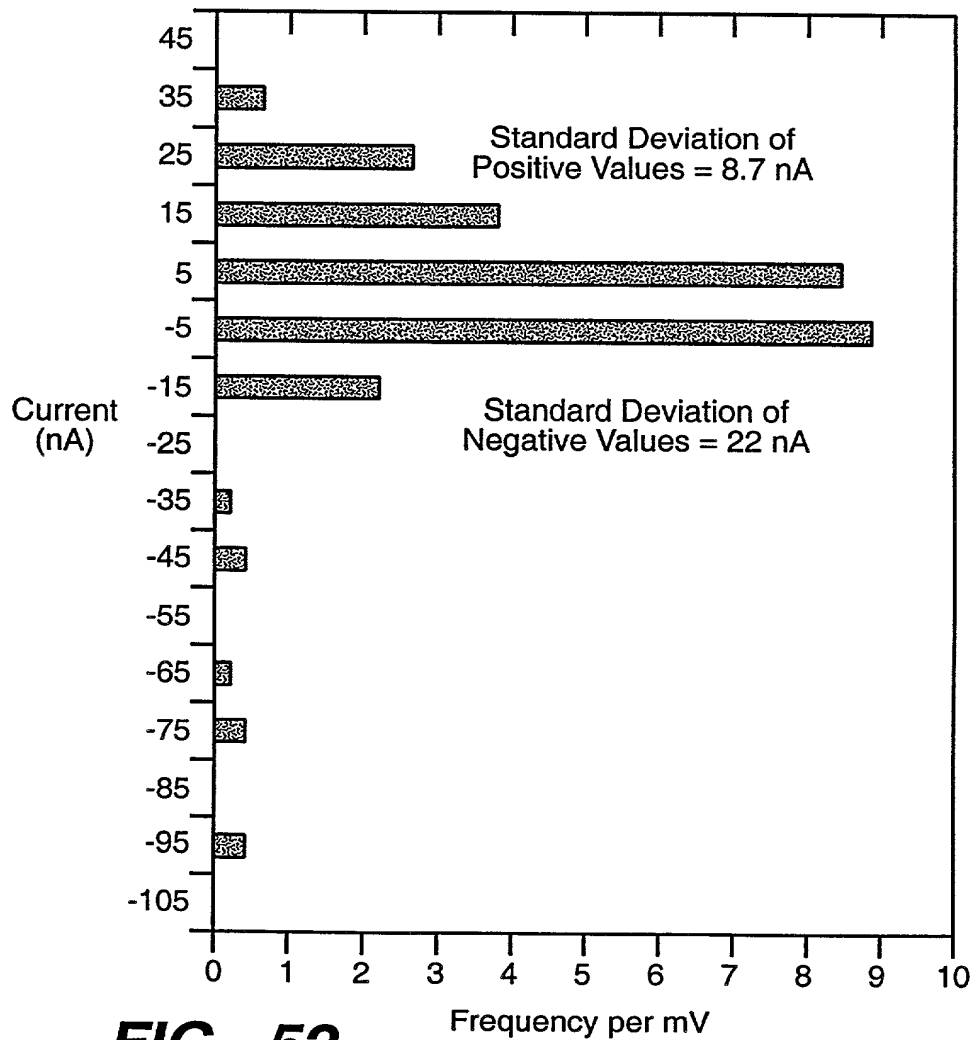
**FIG._45****FIG._46**

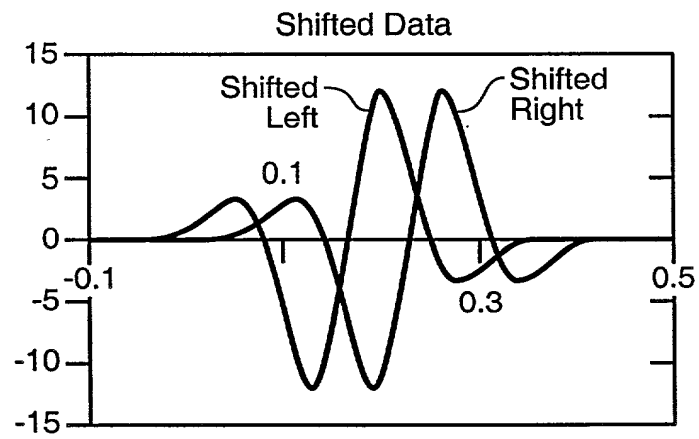
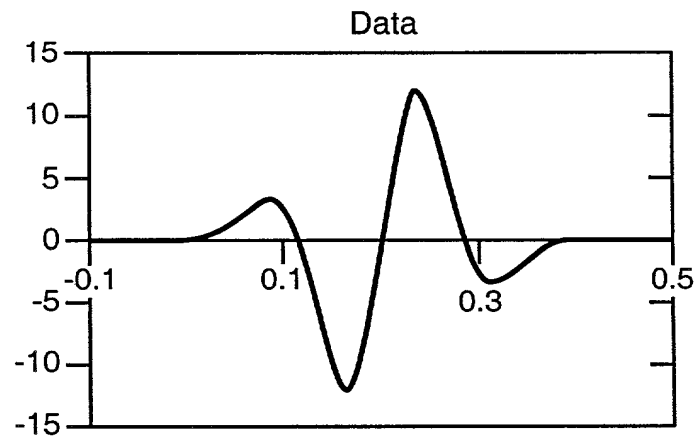
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**FIG._48****FIG._49****FIG._50**

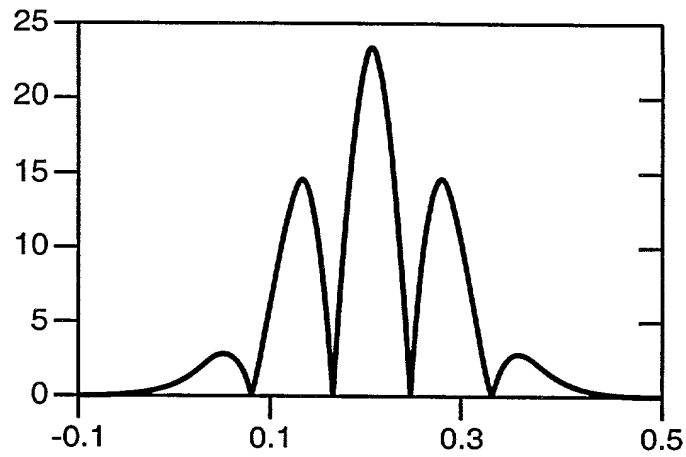
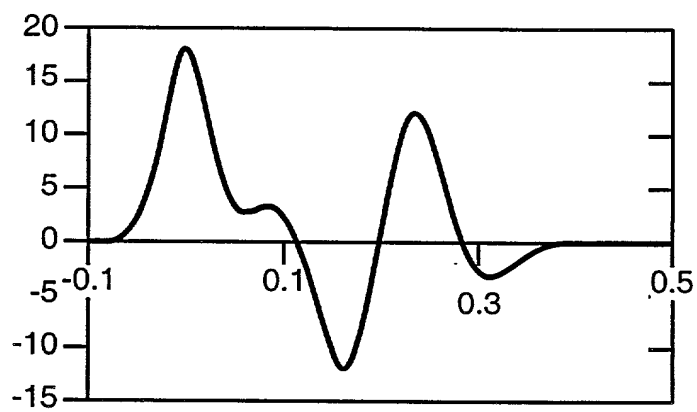
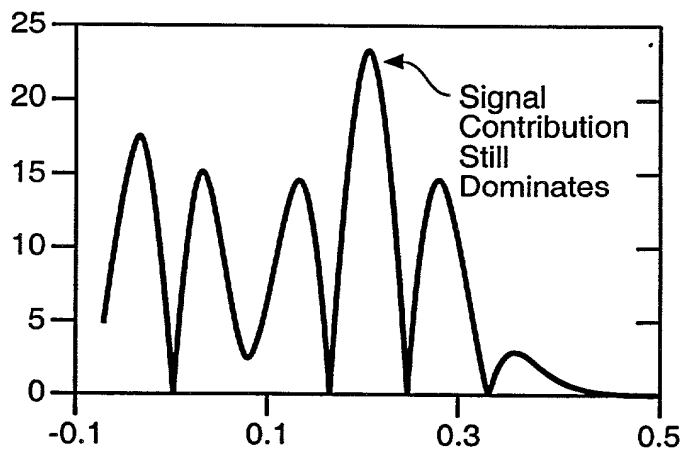
**FIG. 47**

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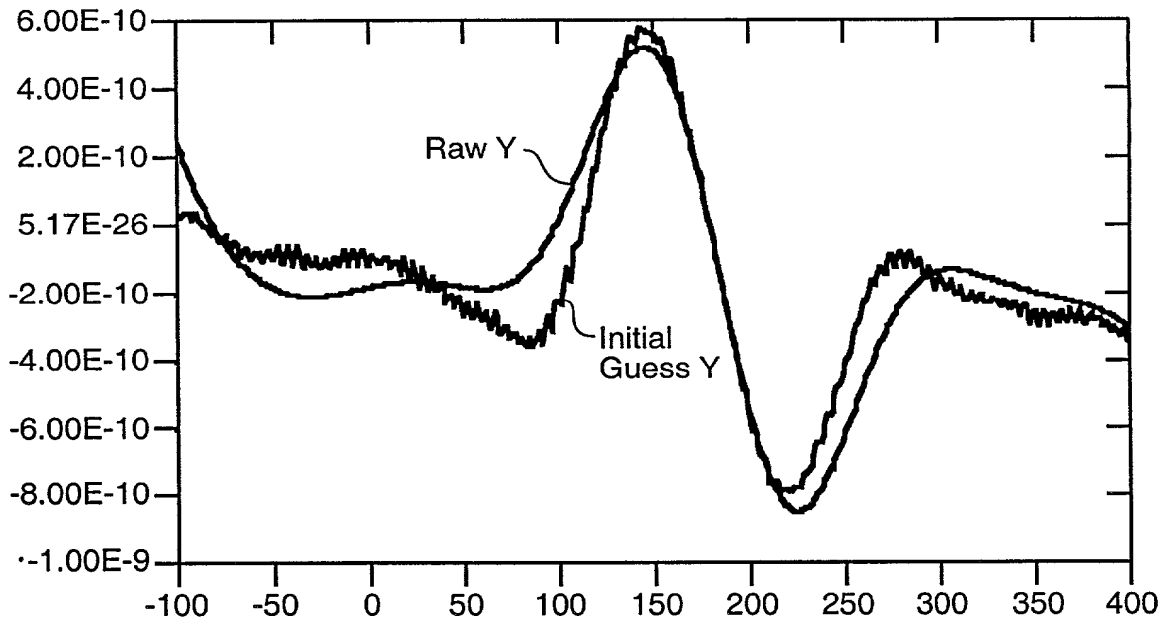
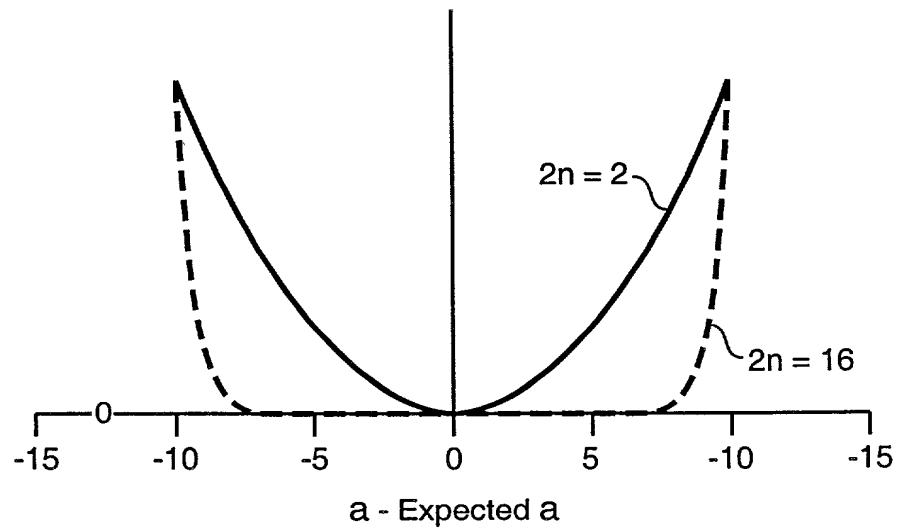
**FIG._51****FIG._52**

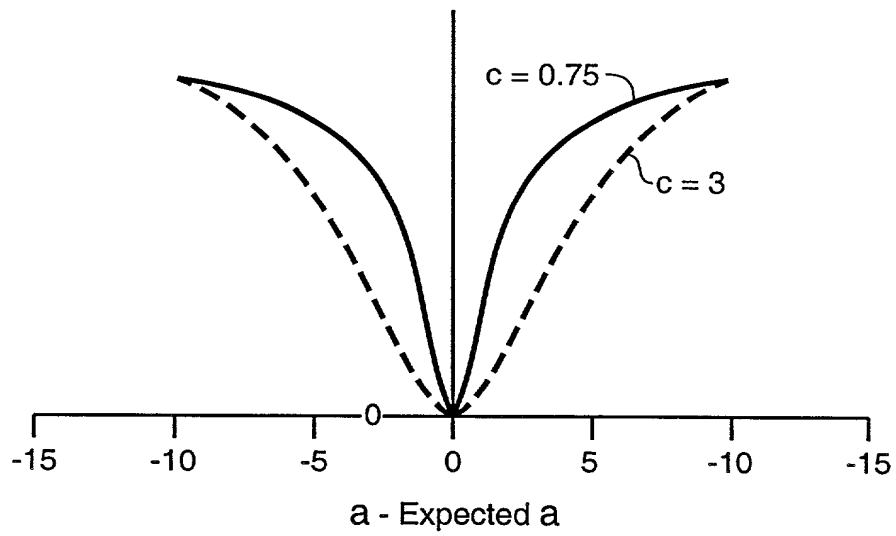
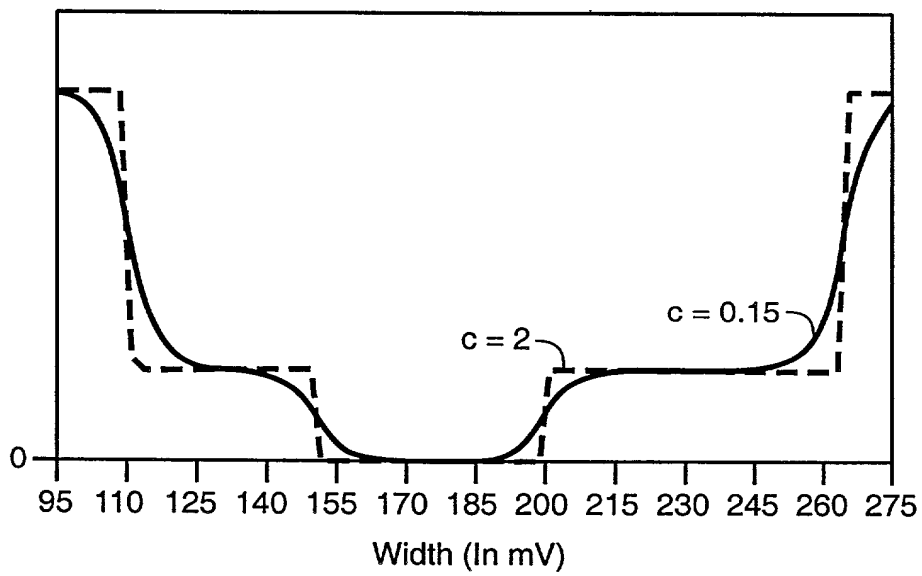


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**FIG. 55****FIG. 56****FIG. 57**

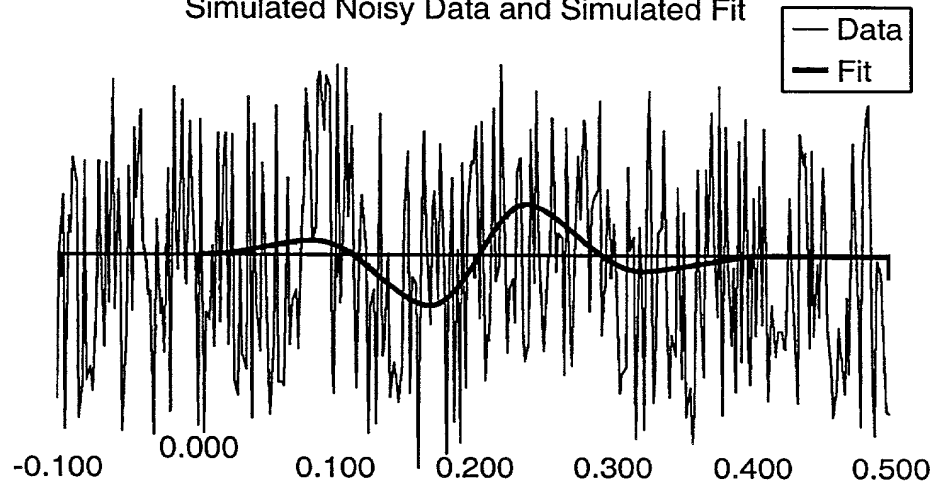
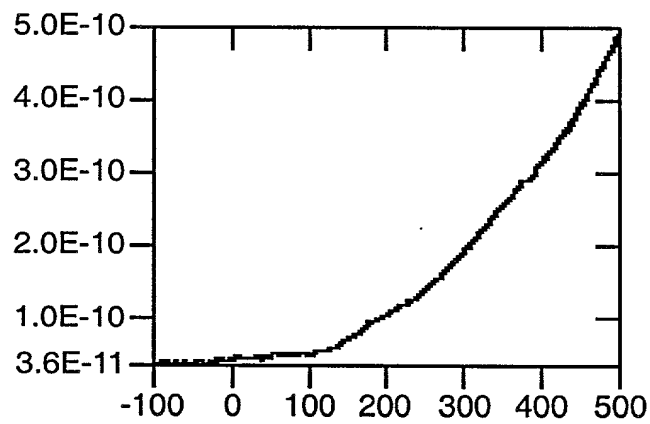
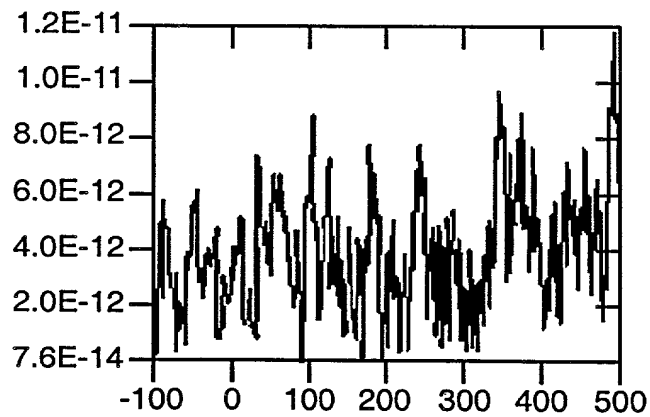
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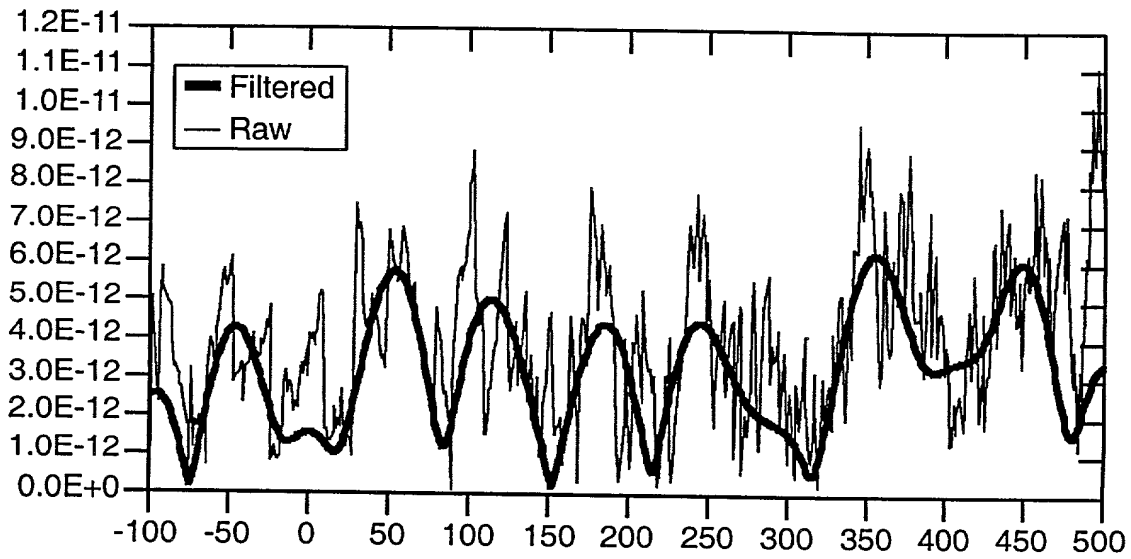
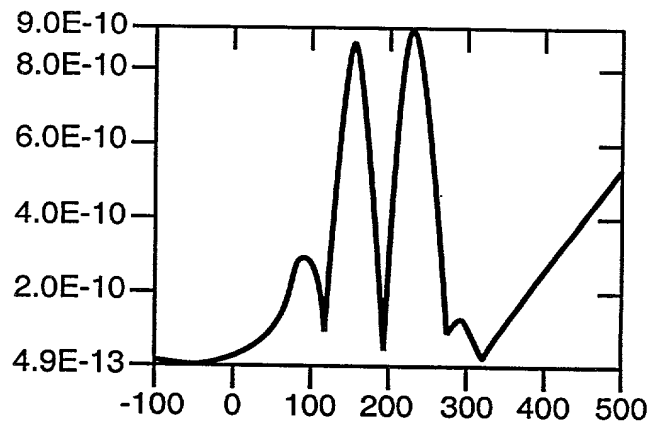
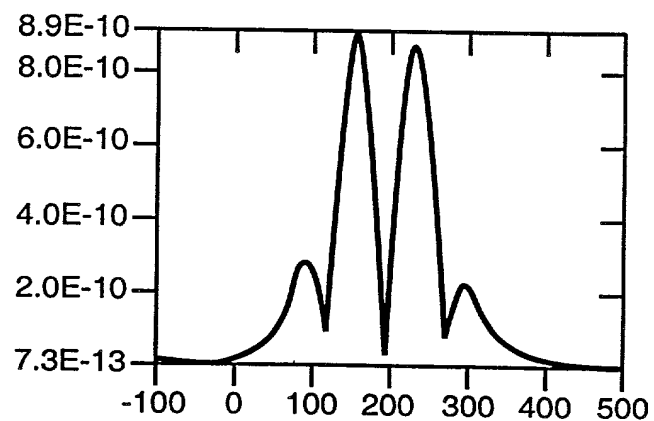
**FIG._58****FIG._59**

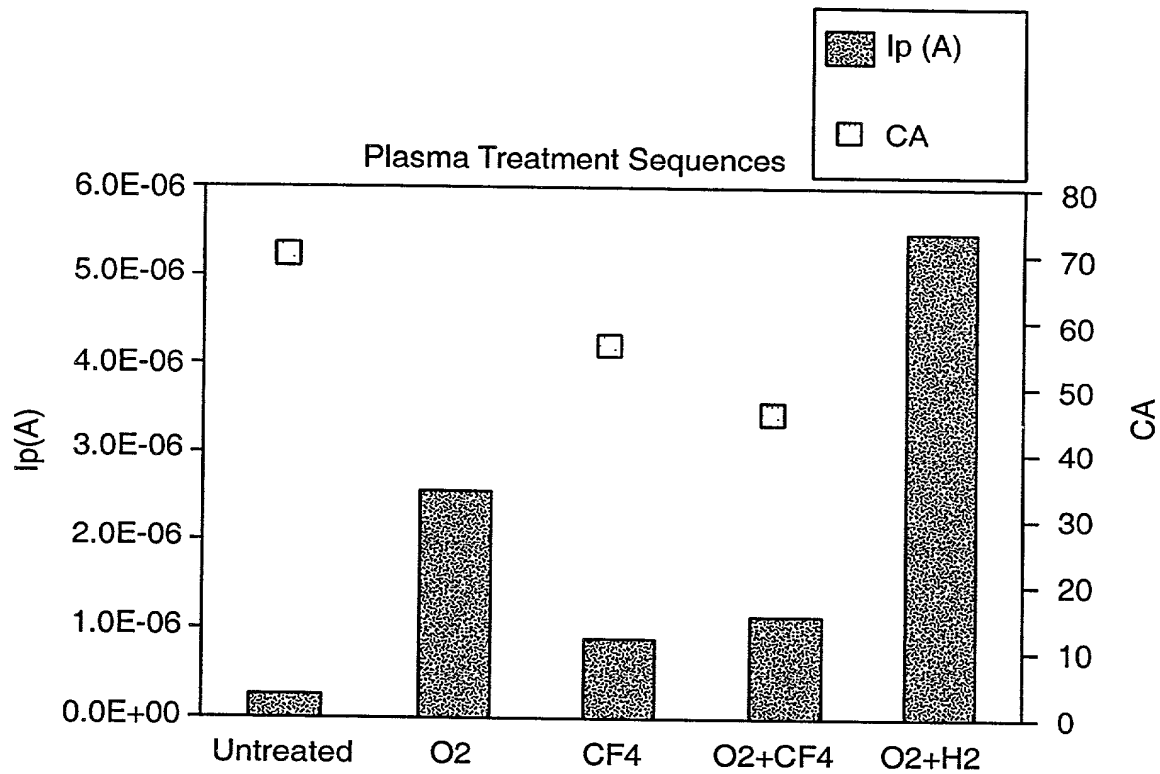
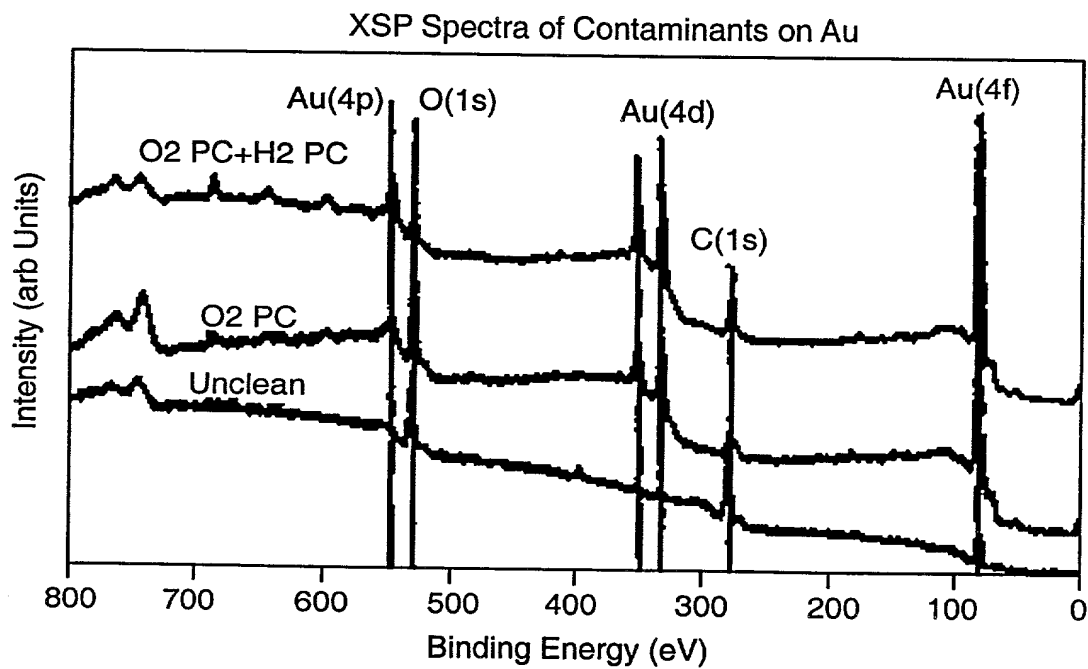
**FIG._60****FIG._61**

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Simulated Noisy Data and Simulated Fit

**FIG._62****FIG._63****FIG._64**

**FIG._65****FIG._66****FIG._67**

**FIG. 68****FIG. 69**

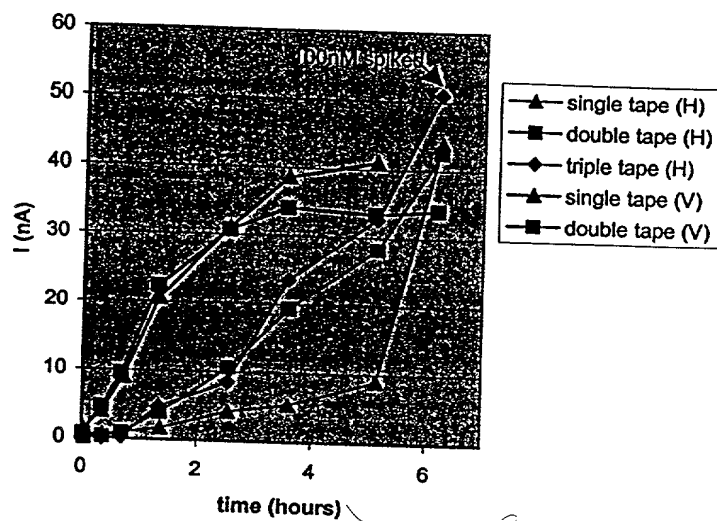


Figure 70 A

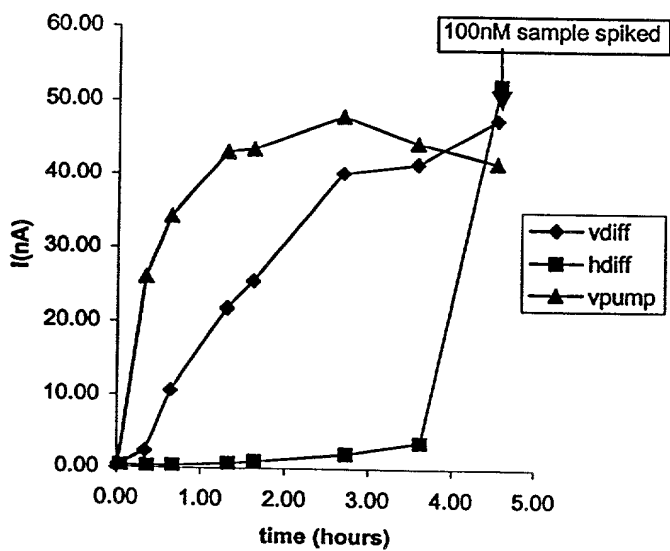


Fig. 70 B

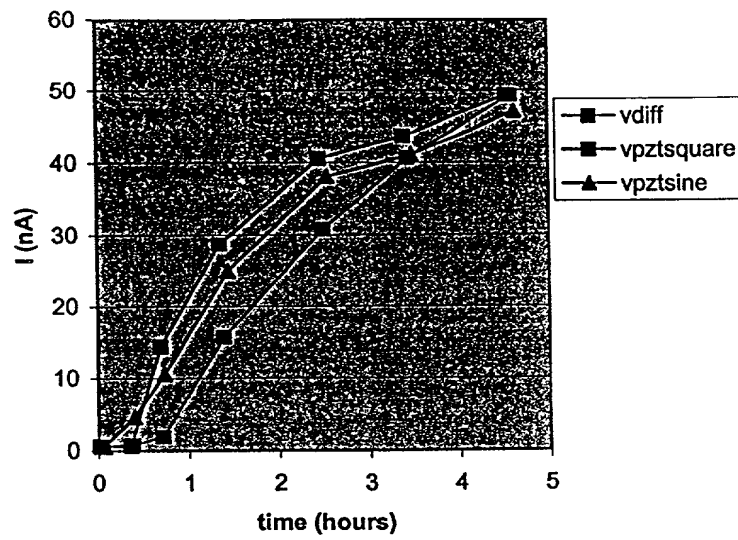


Fig. 70 C

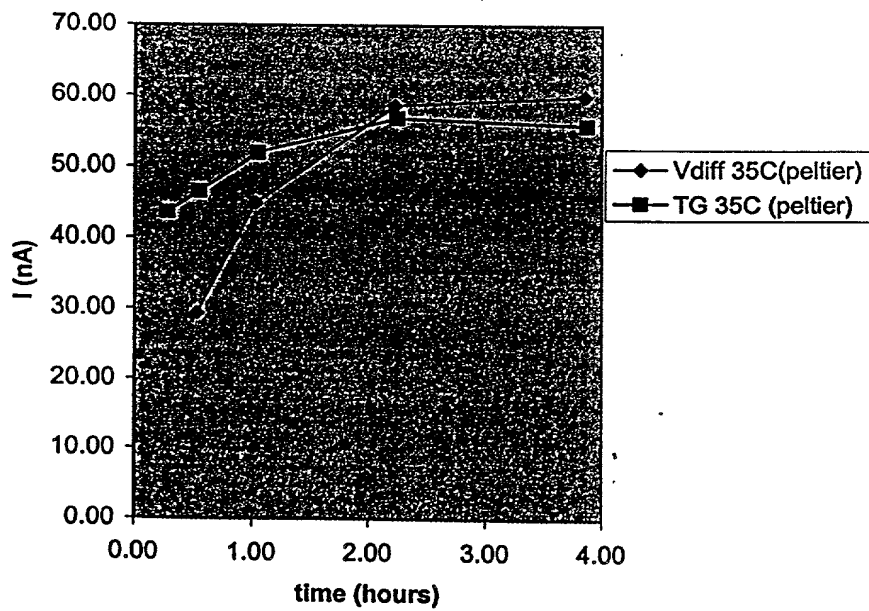


Fig. 70 D

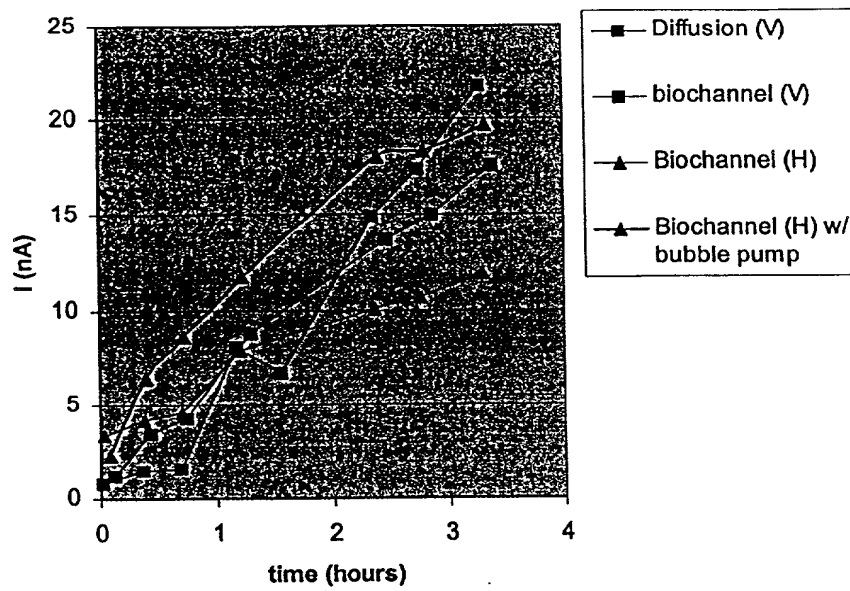


Figure 70E

Covaris, Inc. based acoustic mixing

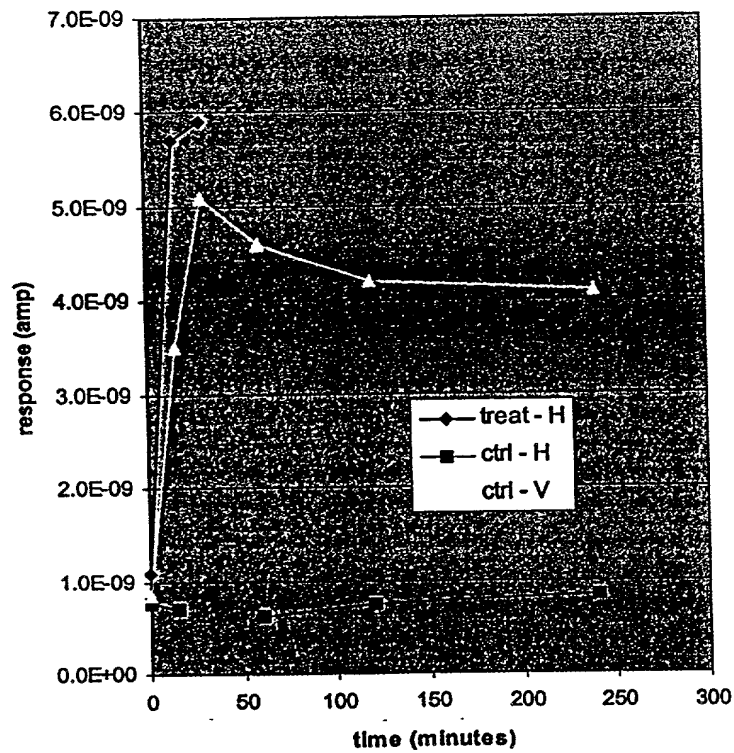


Fig. 70F

E-Chem Cell

Signal Processing Block Diagram

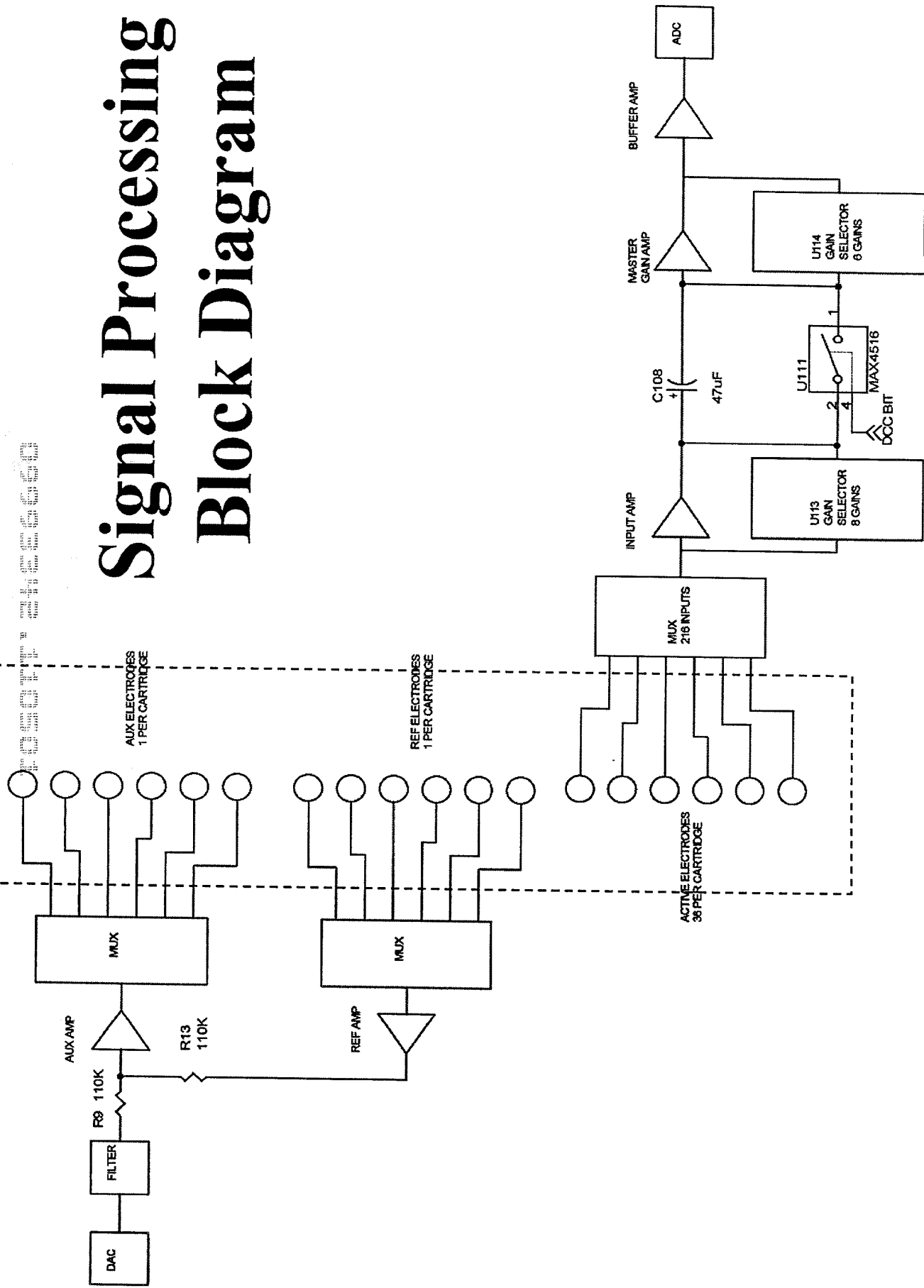


Fig. 71

Thermal Control Block Diagram

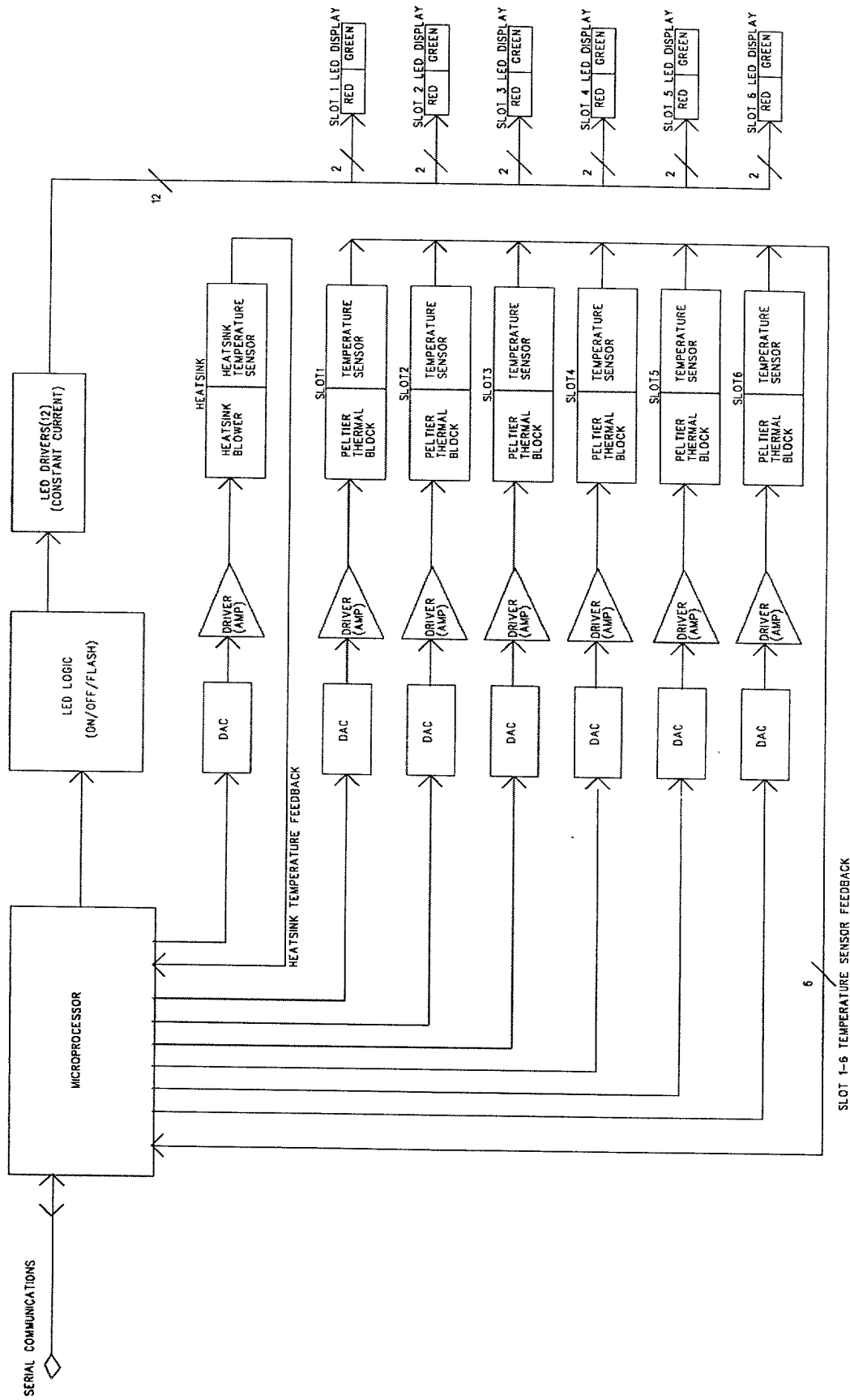


Fig. 72

Signal Processing Board Layout

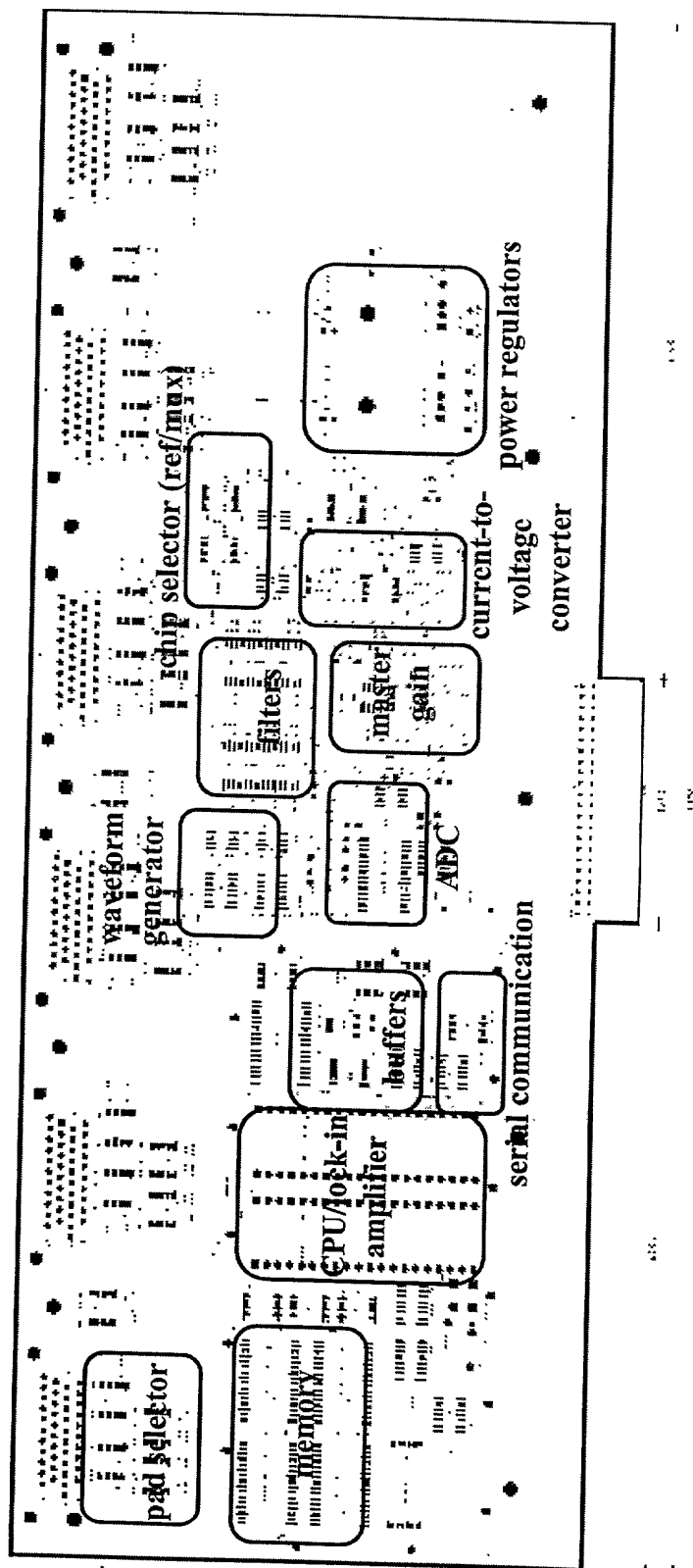


Fig 73